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The American Food Journal

Index to Volume XVIII

January—December, 1923

THE AMERICAN FOOD JOURNAL, Inc.
37 WEST 39th STREET
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The American Food Journal—Index to Volume XVIII

A

Acids in fruit jellies, May, p 250.
Advertising—
American Package Macaroni Association passes on suggestions for, Apr, p 175; Advertising to hotel guests, Apr, p 175; What does it accomplish, Sept, p 413; Uncle Sam to study effect of, Nov, p 548.
Agreement to fix prices charged, May, p 256.
Almy, L. H.—
A study of the preservation of fish in ice, Jan, p 36.
Ambler, Joseph A.—
Coal tar dyes we eat and drink, Feb, p 87.
American Bottlers—
Election of officers of, Dec, p 567.
American Chemical Society—
Papers of, discuss food products, May, p 249.
American Child Health Association—
Announcement by Herbert H. Hoover, Jan, p 25; Appealing to the child's imagination, Feb, p 79; Meeting of the, Oct, p 484.
American Dietetic Association—
Meeting of the, Aug, p 401; Sept, p 423.
American Food Journal, The—
Comments of, on conflicting interests of grocers and pharmacists, Nov, p 520; Comments of, on vinegar industry, Dec, p 568; Announcement of staff changes, Dec, p 568.
American Fruit Growers—
Meeting of, Aug, p 404.
American Home Economics Association—
Meeting of, Sept, p 430.
American Specialty Manufacturers Association—
Meeting of, Sept, p 421; Great oaks from little acorns grow, Oct, p 461; Meeting of, in Minneapolis, Oct, p 471; Considers problem of specialty profit margins, Oct, p 472.
American Sugar Refining Company elects two directors, Apr, p 203.
American Wholesale Grocers' Convention, June, p 302.
Apples—
Britain taking blue ribbon apples, Jan, p 42; Canada utilizing its waste apple products, Jan, p 50; Canning of baked apples now possible, Aug, p 404; Marketing in cartons Sept, p 454; The American apples, Nov, p 550.
Apple juice to be subject to publicity campaign, Jan, p 19.
Armour, J. Ogden, becomes chairman of board of directors, Jan, p 46.
Armstrong, William W.—
Consumers getting much impure vinegar, Feb, p 89.
Ashley, W. B.—
Health and good citizenship, Sept, p 427.
Asparagus canning in California, June, p 300.
Association calendar—
Jan, p 44; Feb, p 102; Mar, p 153; Apr, p 208; May, p 256; June, p 263; July, p 311, Aug, p 359; Sept, p 409; Oct, p 457; Nov, p 505; Dec, p 553.
Australian markets—
United States losing, Mar, p 156.
Automatic machinery—
Rapid handling of foodstuffs by, July, p 320.

B

B. Botulinus—
The heat resistance of spores, Apr, p 177; No longer a menace to public health, Aug, p 401.
Bailey, E. H. S.—
Selecting food with the eye, Nov, p 517.
Baking—
Stanford University Food Research Institute surveys wheat products and the baking industry, Mar, p 148; The shortening and the chemistry of, Aug, p 372.
Baking powder—
H. Wakefield says consumers lack understanding of, Jan, p 40; Standards of, Sept, p 450.
Balcom, A, Caro—
The senior course in household management, July, p 336.
Balderston, Robert, Interviews with, Apr, p 181; May, p 234.
Baldwin, Helen Rich—
Commercial nutrition work among children, Aug, p 382; Condensed milk, Nov, p 527.
Baltimore—
Health poems by children in the public schools, May, p 239.
Banks, Janet G.—
A food project for Junior III girls, July, p 329.
Banks, Mary D.—
A muffin contest, July, p 330.
Barrows, Edward M.—
Domestic science in the movies, Aug, p 430.
Bartlett, Ellen M.—
Building up underweight school children, May, p 231.
Beam, Helena M.—
One hundred calorie portion cards, May, p 238.
Beef, chilled, exports increase in Argentina, May, p 254.
Bell, James F.
The "Eat more wheat" campaign and national betterment, May, p 227.
Better fed boys' and girls' club, Aug, p 374.
Beverages—
Drink resembling tea made from Cassina plant, Jan, p 11; Causes of bacteria in bottled, June, p 299.
Binkerd, Robert S.—
The transportation situation today, Dec, p 563.
Books—
A list for home economics workers, Apr, p 188
Book reviews—
Canning Age Food Packers' Directories; Laboratory Manual of Fruit and Vegetable Products, by W. V. Cruess; An Outline of the Pirquet System, by Dr. Clemens Pirquet, Jan, p 24; Foods of the Foreign-born in Relation to Health, by Bertha E. Wood; Home Economics in the Elementary and Secondary Schools, by Agnes K. Hanna; Our Candy Recipes, by May B. Van Arsdale; Recipes for Institution, by Chicago Dietetic Association; Feb, p 83; Epidemiology of Botulism, by J. C. Geiger; Feeding, Diet and the General Care of Children, by Albert A. Bell; Pharmaceutical and Food Analysis, by Agor Thurston; Significance of Wheat Hairs in Microscopical Examination of Flour, by George L. Keenan; Vitamin B in the Edible Tissues of Ox, Sheep and Hog, by Ralph Hoagland, Mar, p 124; Glue and Gelatin, by Jerome Alexander; Marketing by Cooperative Sales Companies, by Theodore Macklin; Patents, Law and Practice, by Richards and Geier; The Stag Cook Book, collected and edited by C. MacSheridan; Trade-Marks, Trade Names, Unfair Competition; What to Eat in Health and Disease, by Benjamin Harrow, Apr, p 180; Crain's Market Data Book and Directory of Class, Trade and Technical Publications, by G. D. Crain, Jr.; The Exclusive Agency, by the N. Y. University Bureau of Business Research; Farm Meats, by M. D. Heiser; Health Building and Life Extension, by Eugene Lyman Fisk; The Health of the Runabout Child, by William Palmer Lucas; Homemade Apple and Citrus Pectin Extracts and Their Use in Jelly Making, by Minna C. Denton, Ruth Johnston and Fanny Walker Yeatman; Inorganic Chemical Symptoms, by Elton Richmond Darling; Milk Production and Manufacturing Dairy Products in New York State for Year 1921, May, p 226; Collette's Best Recipes, by Marie Jacques; The Conquest of Constipation, by William S. Walsh; Eat and Be Healthy, by Virgil MacMickle; The Microscopical Examination of Food and Drugs, by Henry G. Greenish; Nutrition of Mother and Child, by C. Ulysses Moore; Researches on Fungi, Vol. I, by Reginald Buller; Teeth, Diet and Health, by Kurt H. Thoma; What Shall We Have to Eat, by Jennie Ellis Burdick, June, p 277; America Live Stock and Meat Industry, by Rudolph Alexander Clemen; The Baby's Food, by Isaac A. Abt; A Bibliography of Colloid Chemistry, by Harry N. Holmes; Dairy Bacteriology, by Orla Jensen; Pharmaceutical Botany, by Heber W. Youngken; Right Food the Right Remedy, by Charles C. Froude; Standards of Milk Analysis, by the American Public Health Association and the Association of Official Agricultural Chemists; What to Cook and How to Cook It, by Nannie Talbot Johnson July, p 347; the Calorie Cook Book, by Mary Dickerson Donahey; Eating to Live Long, by William Henry Porter; The Economics of Marketing and Advertising, by W. D. Moriarty; The Encyclopedia of Food, published by Artemas Ward; Fasting and Nutrition, by Sergius Morgulis; Food for the Diabetic, by Mary Pascoe Huddleson, Aug, p 398; The Beverage Blue Book, 1923; Ideas for Refreshment Rooms, published by the Hotel Monthly Press; The Infant and Young Child by John Lovett, Edwin T. Wyman and Lewis Webb Hill; Observation on Milling, by Edgar S. Miller; Personal Hygiene Applied, by Jessie Feiring Williams; The Red Book, 1923 Edition, published by Orrin Thacker Directory; Trade Association Activities, by L. E. Warford and Richard A. May, Sept, p 448; A Book of Unusual Soups, by Mary D. Chambers; Chemical Engineering Catalog, 1923 Edition, published by The Chemical Catalog Company; Cooking for Profit, by Alice Bradley; Economics of the Household, by Benjamin Andrews; Food Planning and Preparation, by Mabel T. Wellman; Industrial Filtration, by Arthur Wright; Practical Dietetics, by Alida F. Pattee, Oct, p 500; Biology of Home and Community, by Gilbert H. Trafton; The Boston Cooking School Cook Book, by Fannie Merritt Farmer; The Dietary of Health and Disease, by Gertrude I. Thomas; The Farm Cook and Rule Book, by Nell B. Nichols; Household Engineering, by Christine Frederick; Nutrition and Clinical Dietetics, by Herbert S. Carter; A Survey of the Milwaukee Market on Packaged Grocery Products, prepared by the Merchandising Service Bureau of "The Milwaukee Journal," Nov, p 546; The Annual Report of the Secretary of Agriculture; Chemistry, Applied to Home and Community by Pauline G. Beery; Commerce Yearbook, 1922 (including part of 1923); The Eleventh Annual Report of the Secretary of Commerce; The Home Dietitian, or Food and Health, by Belle Wood Comstock; Marine Products of Commerce, by Donald K. Tressler; Vitamins, by Ragnar Berg, Dec, p 596.
Borchard, E. K.—
The Sanitary Food Products Factory, Oct, p 469.
Boric acid compound—
Tests show inefficiency of, Mar, p 150.
Botulism—
Canned spinach as a source of, Jan, p 33; Experiments with bacillus (clostridium) botulinus under household conditions, Mar, p 143.
Box manufacturers—
Convention of, Nov, p 518.
Boyer, E. A.—
A study of the spoilage of hams and other pork products, Apr, p 197.
Brazil nuts, More, Jan, p 42.
Bread—
Government adopts standards on, Jan, p 12; Stale, carelessly handled and insanitary, May p 251; Making a nutritionally balanced bread, Aug, p 394.
Breazeal, F. C.—
Model vinegar bill to be introduced in Virginia, Jan, p 8.
Brice, J. D —
Difficulties in the way of repealing present food laws, Jan, p 8.
Bristley, F. D.—
Great oaks from little acorns grow, Oct, p 461.
Brooklyn—
Chart making in class room groups, Jan, p 27.
Brown, Linwood A., and Edwin J. Gott—
Use of Endo's medium in locating milk contamination, June, p 295.
Budgets and better health, June, p 287.
Bureau of Chemistry—
Who's who in, Jan, p 9; Feb, p 63.
Bureau of Plant Industry—
How it helps canners, Feb, p 69.
Business—
The keystone of, July, p 315.
Business girls—
Teaching them to live, Mar, p 129.
Butter—
Advantages in production of high grade, Jan, p 19; Holland's business in Australia's hands, Jan, p 41; Danish butter finds favor here, Mar, p 152; New Zealand production increasing, Mar, p 156; Eliminating the fishy odor in, June, p 299.
Butter fat—
Simple method for determining per cent of, Feb, p 92.
Butter manufacture—
New method of, welcomed by shipper, Aug, p 404.
Buttermilk—
New test shows higher fat losses, Mar, p 148.

C

Cacao products—
Government adopts standards on, Jan, p 12.
Caffeine in Mate, Apr, p 176.
Cagwin, Sarah A.—
The tea and coffee honor roll, Jan, p 32;

556453

Poster talks for 8-B girls, May, p 238.
Cain, Marguerite—
Chart making in class room groups, Jan, p 27.
Calcium—
Its value in the diet, Oct, p 463.
Calendar of associations and conventions, Jan, p 44; Feb, p 102; Mar, p 153; Apr, p 208; May, p 256; June, p 263; July, p 311; Aug, p 359; Sept, p 409; Oct, p 457; Nov, p 505; Dec, p 553.
California figs—
New packing of, Sept, p 450.
California Fruit Products Industries—
What they have accomplished, July, p 317.
Calvin, Henrietta W. and Alice A. Johnson—
Food work for commercial high school girls, Mar, p 140.
Campbell, Walter G.—
An outline of his work in connection with the Bureau of Chemistry, Jan, p 9; Standards of quality in canned foods, Feb, p 67; The food manufacturer's opportunity, June, p 269.
Canada's pure food regulations, May, p 228.
Canadian-West Coast service planned, Apr, p 202.
Candy manufacturers—
Reason for new slogan of, Jan, p 19.
Canned corn—
1922 pack smaller than normal, Jan, p 50.
Canned foods—
Standards of quality in, Feb, p 67; How to increase the consumption of, Feb, p 74; Twenty per cent of chain store sales, Feb, p 75; Sales increase, Mar, p 153; Names of, must be identified, May, p 256.
Canned goods—
Trend toward higher quality, Feb, p 73; Market for, in Spain, Sept, p 454.
Canned lobsters—
Discoloration, smut or blackening of, July, p 345.
Canned milk trade war in Singapore, Apr, p 202.
Canners—
Favor change of grades, May, p 256; Standards for tin plates, urged by, July, p 319; National Association issues statement, Aug, p 404; Hold important meeting, Nov, p 518; National canners to meet, Dec, p 567; Meeting of New York State Canners, Dec, p 567; Hold interesting demonstration, Dec, p 594.
Canneries—
Science brings pimentoes to our, Aug, p 373
Cannery By-Products—
The utilization of, Oct, p 502.
Canning—
What the canning industry has accomplished, Jan, p 15; Development of, in Canada, Sept, p 454; Canning methods improved by research, Oct, p 470; Tin or glass for canning foods, Nov p 548.
Canning courses at Berkeley, Feb, p 90.
Canning Trade Almanac, The, May, p 256.
Carbon dioxide treatment of foods, The, Oct, p 489.
Cashew nut, East Africa supplies the, Apr, p 202.
Cassina plant—
Beverage resembling tea made from, Jan p 11; Bureau of Chemistry experiments with, Apr, p 177.
Cattle—
Japanese have their eye on Argentine, Jan, p 42; 1922 estimates Feb, p 99; Paris eats 359,000 a year, Mar, p 151.
Cattle industry—
South Africa's canneries may save, Jan, p 41.
Caviar—
Rumanians supply, to American, Mar, p 152.
Cereal—
Did you eat for breakfast, July, p 335; Value of, established by research, Nov, p 511.
Ceylon tea—
Improvement of industry, Aug, p 397.
Champion, William M. and Agnes H. Schroeder—
Carrying health to the home, June, p 285.
Chart making—
In class room groups Jan, p 27.
Cheese—
Value of, in the diet, Mar, p 117; The town cheese made famous, Mar, p 152; Consumption below other dairy products, Apr, p 177; Canadian exports to be graded, Apr, p 203.
Cheese pests—
Bulletin on, and their control, Feb, p 87.
Chernoff, Dr. Lewis H.—
Pectin, jelly-making and sugar, Apr, p 200.
Cherries—
Manufacture of Maraschino type, Sept, p 444.
Children—
Classes for undernourished, Feb, p 92; Chubby children and how to grow them, Apr, p 192.
Chocolate and cocoa association formed, May, p 228.
Chocolate goods in Portugal, Mar, p 152.
Christie, Arthur W.—
Letter to W. D. Farnum, May, p 217.
Citrus pectin gels, Studies on, May, p 249.
Civil Service examinations, July, p 354.
Class organization—
Play as an organizer, Aug, p 386.
Class room—
Come out of the, Sept, p 425.
Cleveland Associated Charities Home Economics Department, June, p 289.
Clothing as a factor in nutrition, Nov, p 523.
Coal—
Poisoning from poor coal, Apr, p 174.
Coal tar dyes we eat and drink, Feb, p 87.
Cochran, Hamilton—
Advantages of glass containers, May, p 151.
Coconuts gain in popularity in the United States Feb, p 95.
Coffee—
The tea and coffee honor roll, Jan, p 32. Mexican crop damaged, Feb, p 95; Europeans big coffee drinkers, Mar, p 152; What the industry has accomplished, Apr, p 167.
Coffee Roasters—
Meeting of Nov, p 518; Convention of, Dec, p 567.
Cole, Elizabeth—
Bringing health to children, Oct, p 482.
Commerce methods—
School of, July, p 331.
Condiments—
Governments adopts standards on (other than vinegar and salt), Jan, p. 38.
Confidence, exchanging confusion for, Mar, p 123.
Containers—
Advantages of glass, May, p 219.
Container Association, National, convenes, Dec, p 567.
Conventions, News of, Oct, p 498.
Cook Book, A community, June, p 282.
Cookery—
A practical demonstration in cooking for health, Mar, p 132; Pupil demonstration in, Mar, p 140; Experiments in, Sept, p 434.
Cooperation—
New experiments in, between manufacturer and laboratory, Feb, p 61.
Corn oil—
Its preparation and uses, Feb, p 90.
Corn products association formed, Mar, p 158.
Cornelius, Elizabeth—
The Vitamin's the thing, poem, May, p 239.
Cost accounting—
What it means in food manufacture, Sept, p 417.
Cow, The careful, a poem, Apr, p 187.
Cox, Viva—
Food selection lessons in school lunch rooms, May, p 237.
Craig, Agnes Houston—
Creating home interests in Springfield, July, p 327.
Crowell, Mabel F.—
Home economics in Junior Highs, July, p 327.

D

Dairy by-products—
Utilizing, for food, May, p 251.
Dairy, food and drugs officials to meet, July, p 352; Meet in Duluth, Sept, p 422.
Dairy products—
Dried whey may be profitable, Jan, p 38; Night air for Normandy cattle, Apr, p 202.
Dallas elementary schools—
Food work in, May, p 237; Food selection lessons in school lunch rooms, May, p 237.
Dannerth, Dr. Frederic—
The Food Products Institute of America, Sept, p 419.
Dates—
From groves two centuries old, Feb, p 95; Date Song, a poem, Nov, p 528.
Day in a girl's life, or the open door to health Jan, p 32.
Day in Happytown, A, Mar, p 130.
Definitions and standards—
Secretary of Agriculture, formally approves work of Joint Committee on, Jan, p 12
DeGroate Melvin—
The growth of the food flavors industry, Aug, p 391.
Dehydration—
German plans, Mar p 151; What is the matter with, Apr, p 171; Essentials in, June, p 299.
Delivery system—
Economy of the, June, p 276.
DePuyt, Philip A.—
Economy of the delivery system, June, p 276.
Dietitians—
Training for, Feb, p 91; What hospitals expect of, Dec, p 591
Dinner song, a poem, Nov, p 531.
Disease—
Important consideration in the relation of food to, Feb, p 85.
Disinfection in food products factories, May, p 247.
Distribution—
Our present methods of, Dec, p 568.
Domestic science—
Teaching, in Washington, Mar, p 127; Domestic science in the movies, Sept, p 430.
Domestic science teacher—
The, and the food manufacturer, Jan, p 24; The, and homemaking, Oct, p 473; The, and the World's Dairy Council, Oct, p 483; The, and the milk campaign, Dec, p 571.
Donna, M. J.—
What the macaroni industry has accomplished, June, p 273.
Douglas Pectin Company—
Upheld by court, Apr, p 203.
Dried fruits—
The relation between insect growth and moisture in, Oct, p 502.
Dunn, Charles Wesley—
Remedy proposed for food law conflicts May, p 222; A declaration of belief, Aug, p 363.

E

"Eat more wheat" campaign—
The, and national betterment, May, p 227.
Eddy Paper Corporation—
Takes over old company, Jan, p 44.
Eddy, Walter H.—
New experiment in cooperation between manufacturer and laboratory, Feb, p 61.
Edible Gelatin Manufacturers of America, Inc., announce industrial fellowship, Jan, p 14.
Edmondson Ruth B., Charles Thom and L. T. Giltner—
Canned spinach as a source of botulism, Jan, p 33; Experiments with bacillus (clostridium) botulinus under household conditions, Mar, p 113.
Edwards, Dorothy, and Edyth Strumpler—
Open air school work in Springfield, July, p 340.
Ells, Mrs. Margaret—
Lessons on utensils in continuation school, July, p 337.
Ells, Mrs. Margaret, and Helen I. Tolum—
Reaching into the home, Aug, p 386.
Endo's Medium—
Use of, in locating milk contamination, June, p 295.
Erwin, Beulah J.—
Selecting a well-balanced school lunch, May, p 235.

F

Factory inspection—
Uniformity of, June, p 297.
Farmers buy forty per cent of food supplies, Feb, p 99.
Farnum, W. D.—
What is the matter with dehydration, Apr, p 171.
Federal Food and Drugs Act—
Building on good results accomplished by, Apr, p 179.
Federation for Child Study—
Health work in summer play schools, Feb, p 77.
Feeding five, June, p 285.
Fiber boxes in export service, Nov, p 518.
Field, Ada M.—
Grade teachers study nutrition, Oct, p 475.
Field, E.—
A study of the preservation of fish in ice, Jan, p 36.
Fijis enter world trade, Jan, p 41.
Filled milk—
Prohibition of, recommended by U. S. Senate Committee, Feb, p 76; Filled milk bill favorably reported to U. S. Senate, Feb, p 90; Filled milk bill passed by Senate, Mar, p 118; Filled milk bill passes in Pennsylvania, Apr, p 206; Filled milk legislation adopted in more states, Apr, p 206; Two states pass filled milk bills, Aug, p 369.
Fine, M. S.—
Value of cereals established by research, Nov, p 511.
Fink, A. J., C. O. Johns and D. Breese Jones—
Making a nutritionally balanced bread, Aug, p 394.
Fish—
A study of the preservation of, in ice, Jan, p 36; Market for product made from fish refuse, Sept, p 454; Fish as food, Oct, p 490; Publicity needed to sell fresh fish, Oct, p 493.
Fixed price law being considered in Canada, Apr, p 201.
Flagg, Etta J.—
Home economics in Los Angeles, May, p 236.
Flavoring extracts—
Governments adopts standards on, Jan, p 38; Manufacturers' convention June, p 306.

Flour—
 Self-rising, law in Australia, Jan, p 38; American flour in Austria, Mar, p 151; Converting cattle into flour, Mar, p 152; Texas bill puts restriction on the manufacture of self-rising flour, Apr, p 179; Output of flour reduced by Austria, Aug, p 397.
Flour and bread—
 The army method of judging, July, p 348.
Food—
 Important consideration in the relation of, to disease, Feb, p 85; More authority for food and drug rulings May, p 225; Food and dairy officials meet, May, p 250; Food lessons in pictures, June, p 280; Relation of food to art work, July, p 328; What constitutes spoiled food, July, p 343; Suggestions for judging foods on the market, Sept, p 452; The carbon dioxide treatment of foods, Oct, p 489; The nation's food and the law makers, Nov, p 515; Selecting food with the eye, Nov, p 517; Food and the nation's capital, Nov, p 520; Catering for the full-tray patient, Nov, p 550; The cost of selling food, Nov, p 550.
Food broker—
 Has full support of trade, Feb, p 72; The high calling of the, Dec, p 557.
Food containers—
 Working for standard sizes of, Feb p 98.
Food control officials plan uniform food legislation, Jan, p 7.
Food distribution—
 Correct the abuses which have crept into, June, p 278.
Food distributor and producer—
 More about the common interests of, Mar, p 126.
Food economics—
 Place of the laboratory man in the world of, Jan, p 13.
Food expositions—
 British, 1923, interest trade, Jan, p 41.
Food field—
 Applied science in the, Dec, p 568.
Food flavors—
 The growth of the industry of, Aug. p 391.
Food and Health Education—
 Announcement of new department, Jan, p 25; Comments of readers on, Mar, p 134; May, p 217; Aug, p 361; Sept, p 429; Oct, p 459; Nov, p 507; Dec, p 555.
Food imports—
 British, back to pre-war basis, Jan, p 44.
Food industry—
 Value of research work in, Jan, p 21; Interrelationships of the, July, p 326.
Food inspectors—
 A steelyear's support for traveling food inspectors, Apr, p 174.
Food laws—
 Illinois bill to amend, Apr, p 204; A proposed remedy for conflicts, May, p 222; The philosophy of, Nov, p 520.
Food legislation—
 A plan for obtaining uniform Jan, p 7; Two more comments on uniform, Mar, p 121; Uncommon sense in, Oct, p 472.
Food manufacture—
 What cost accounting means in, Sept, p 417.
Food manufacturer—
 And the teacher of domestic science, Jan, p 24; The, and child health, May, p 229; The food manufacturer's opportunity, June, p 269; The responsibilities of the, July, p 326; A declaration of belief for the, Aug, p 363; Harmony between the, and control officials, Sept, p 421; Growing of cooperation among food manufacturers, Oct, p 472.
Food poisoning scares, Psychoanalyzing, Mar, p 123.
Food problems—
 Some, reflected in the biscuit industry, Mar, p 125.
Food products—
 Exchange of, with other nations, Jan, p 46; The sanitary factory for, Oct, p 469.
Food Products Institute of America—
 Organized, Jan, p 40; Annual report of the general secretary to the, Sept p 419; Broad aims of the, Sept p 421; Interesting conference arranged by the, Nov, p 517; First annual conference of the, Dec, p 591.
Food project for Junior HI girls, A, July, p 329.
Food research—
 Plans for new work in, Sept, p 121.
Food show by the public schools, A, June, p 288.
Food standards—
 Adopted by the government, Jan, p 19
Food technology—
 Comments on our new department, Feb p 88.
Food values—
 Enhancing food values, Sept, p 415; And vitamins from the manufacturer's standpoint, July, p 321.
Food work for commercial high school girls, Mar, p 110.
Food material—
 Window shopping for Nov, p 522.
Foodstuffs—
 And statistics, Mar, p 123; Bolivia buys foreign, Apr, p 202; Rapid handling of, by automatic machinery, July, p 320; Principles to be observed in standardizing, Sept, p 441.
Forward and Company doing business in Bombay, June, p 306.
Frankel, Dr. Leo—
 Twenty-five thousand dollars for health education, Sept, p 426.
Frazier, Jr., W. W.—
 Accomplishments of the specialty men, Oct, p 171.
Fresh fish—
 Publicity needed to sell, Oct, p 493.
Frozen meats—
 Preference for, in China, Sept, p 450.
Fruit—
 What the preservers and fruit products industry has accomplished, Mar, p 120; Importance of haste in handling of fruits and vegetables, Mar, p 148; Government to inspect fruits and vegetables, July, p 352; Exposition coming to New York, Sept, p 421.
Fruit industry, British, aroused, Mar, p 151.
Fruit preserving industry—
 New, for Annapolis, valley, Jan, p 41.
Fryefield, Maurice—
 Enhancing food values, Sept, p 415.
Fuel—
 The situation in the home, Oct, p 502.

G

Geiger, J. G.
 Important consideration in the relation of food to disease, Feb, p 85.
Gelatin—
 Research on edible, Jan, p 14; A new source for, Sept, p 454.
Germany—
 No chance of food leaving, Feb, p 95; Food consumption decreases in, Apr, p 202.
Gibbs, Winifred Stuart—
 What you should know about pumpkin, Feb, p 75; What the coffee industry has accomplished, Apr, p 167; The careful cow, a poem, Apr, p 187; Chubby children and how to grow them, Apr, p 192; Come out of the class room, Sept, p 425; Socializing the recitation, Nov p 521; Date song, a poem, Nov, p 528; Dinner song, a poem, Nov, p 531.
Giltner, L. T., Ruth B. Edmondson and Charles Thom—
 Canned spinach as a source of botulism, Jan, p 33; Experiments with bacillus botulinus under household conditions, Mar, p 143.
Glanton, Louise Phillips—
 Clothing as a factor in nutrition, Nov, p 523.
Class containers—
 Some facts regarding Jan, p 20; Various methods of labeling, Feb, p 91.
Gleason, May—
 Food work in Dallas elementary schools, May, p 237.
Gluten—
 Importance of determining, in flour, Apr, p 178.
Gore, H. C.—
 The formation of maltose in sweet potatoes on cooking, Nov, p 519.
Gott, Edwin J. and Linwood J. Brown—
 Use of Endo's medium in locating milk contamination, June, p 295.
Grain products—
 Government adopts standards on, Jan, p 12.
Grapefruit—
 A liking for, developing in England Sept, p 454.
Grapes—
 Canned, an Oriental delicacy, Jan, p 41.
Greenbaum, C. Stanley—
 Wyoming stands ready to consider uniformity in food legislation Jan, p 39.
Greer, Carlotta C.—
 Food lessons in pictures June, p 280.
Grizzle, Olga—
 Did you eat cereal for breakfast, July, p 335.
Grocers—
 New York grocers study business outlook, Mar, p 122; Ohio wholesale grocers charged, Mar, p 153; The education program of retail grocers, July, p 321; Committee chairman of grocers' association appointed, July, p 352; Retail grocers meet in St. Paul, July, p 352; Operating expenses standardized for grocers, Aug, p 365; Ideas and their utilization by grocers, Aug p 402; Meeting of chain store grocers, Nov, p 518; Giving a thought to the problems of the wholesale grocer, Nov, p 520; Meeting of wholesale grocers executive committee, Nov, p 544; The business of being a grocer, Nov p 548; The grocer and the specialty man, Dec, p 562; Executive board of, meets, Dec, p 567.
Grocery business—
 Imagination versus the treadmill, June, p 275; The need for cooperation, June, p 276.
Grocery stores—
 Up to manufacturers and jobbers to help retail, Jan, p 50.
Guest, Cora—
 A seventh grade party, Mar, p 132.
Guest, Margaret—
 Weight as an indication of health, Mar, p 131.

H

Hallock, Grace T.—
 Appealing to the child's imagination, Feb, p 79.
Harding, Warren Gamaliel, A tribute to, Aug, p 374.
Hart, Constance C.—
 Nutrition week in high school, June p 287.
Hartson, Mary Reed—
 Some facts about powdered milk, Aug, p 368; The home economics "business woman," Aug, p 370.
Harvard University Bureau of Business Research—
 Collects statistics, Feb, p 100; Grocers report to Apr, p 206.
Haugen butter standard bill becomes law, Mar, p 126.
Health—
 Teaching the rules of, Jan, p 29; The house that health built, Jan, p 31; Health work in summer play schools, Feb, p 77; Appealing to the child's imagination in getting over health rules, Feb, p 79; Assembly program of, Feb, p 82; Health game, Feb, p 84; Health stories and plays, Apr, p 185; Health laws, June, p 282; Fun in the health class, June, p 284; Health poems, June, p 288; Open door to health, or a day in a girl's life, July, p 324; The health project in the lower grades, Aug, p 376; The game of, in upper grades, Aug, p 378; Twenty-five thousand dollars for health education, Sept, p 426; Health and good citizenship, Sept, p 427; Poster service in teaching health subjects, Sept, p 435; Best roads to health, Oct, p 474; Bringing health to children, Oct, p 482; The bread of life, Oct, p 502; Promptness and health, Nov, p 524.
Health journal—
 How it helps the teacher, Oct, p 480.
Health week—
 A program for, Oct, p 483.
Heat control, Automatic, June, p 270.
Henss A. D.—
 Manufacturing methods in the margarin industry, Dec, p 587.
Herrick, Charles E.—
 Says wholesale meat prices close to 1913 level, Jan, p 46.
Herring, salt—
 Growth of shipments of, into China, Aug, p 397.
Herring flour, new health product, Aug, p 404.
Herscher, J. W.—
 Food broker has full support of trade, Feb, p 72.
Herva mate rivals tea, Feb, p 95.
Hill, H. R.—
 A study of the preservation of fish in ice, Jan, p 36.
Hodges, C. V.—
 Protected shipment, what the phrase means, Jan, p 14.
Holmes, Dr. Arthur D.—
 Food values and vitamins from the manufacturer's standpoint, July, p 321.
Holsopple, Naomi Quinter—
 Cooking lessons for trade school girls, Mar, p 133; Teaching health through home economics, Mar, p 141.
Home economics—
 How it helped food manufacturers, Jan, p 22; Teaching health through, Mar p 141; The food manufacturer and the home economics woman in business, Apr, p 176; A list of books for home economics workers, Apr, p 88; Home economics clubs for high school girls, Apr, p 190; The big idea in, June p 281; Home economics in Junior Highs, July, p 328; New York City supervision meets, July, p 341; The home economics "business woman," Aug, p 370; The home as the center of home economics education, Oct p 477; Poster aids for home economics, Oct, p 479; New bureau of, prepares helpful chart, Nov, p 532; Home economics and general culture, Dec, p 560; Interesting meeting of New York State workers, Dec, p 578.
Home—
 Creating home interests in Springfield, July, p 327; Reaching into the, Aug, p 386; Homemaking and the domestic teacher, Oct, p 473; The, as the center of home economics education Oct, p 477.
Homemaking, New director of, in New York City, Oct, p 478.

Home work—
The poetry of, Aug, p 385.
Honey—
Using, instead of sugar, Jan, p 41; Austrians like American honey, Jan, p 41; American, popular in Denmark, Mar, p 151.
Hood, E. G.—
Discoloration, smut or blackening of canned lobsters, July, p 345.
Hoover, Herbert H.—
Announces amalgamation of the Child Health Organization and the American Child Hygiene Association, Jan, p 25.
Hoover, Jessie M.—
The domestic science teacher and the milk campaign, Dec, p 571.
Hospital Dietetic Council holds conference, Nov, p 518.
Hospitals—
What they expect of dietitians, Dec, p 594.
Hotchkiss, Willard Eugene, New educational head of meat packers' institute, Apr, p 204.
Hotel dietitian—
Her status her work, and her problems, Sept, p 437.
Hotel menus—
Danish housewives copying, Jan, p 41.
House that health built, The, Jan, p 31.
Household management—
Housekeeper—
The senior course in, July, p 336.
The, a consumer and a producer, Dec, p 580.
Houston, John D.—
Imagination versus the treadmill, June, p 275.
How to tell a real prince, June, p 282.
Howard, Charles D.—
Believes thoroughly in principle of food law uniformity, Jan, p 39.
Hunter, Albert G., and Bernard A. Linden
An investigation of oyster spoilage, Nov, p 538.

I

Ice Cream—
New law in Pennsylvania, Apr, p 203.
Illinois—
Foods and dairies division superintendent discusses uniform food legislation, Jan, p 39.
Imagination versus the treadmill, June, p 275.
Imports—
British food, back to pre-war basis, Jan, p 41.
Industrial organization, Principles of, Nov, p 513.
Industrial stability—
Simplification and standardization, Oct, p 466.
Ingersoll, Blanche—
The staff of The American Food Journal acquires, Sept, p 424; Best roads to health, Oct, p 474.
Institute of Margarin Manufacturers to meet, May, p 254.
Institutions—
What's new in kitchen equipment for, Sept, p 446.
International cooperation and its opposite, Oct, p 472.
Iverson, Anna—
A program for health week, Oct, p 483.
Jacobs, Emma S.—
Teaching domestic science in Washington, Mar, p 127.
Jams and Jellies—
Labeling of, Apr, p 201; Pectin in, Dec, p 594.
Jelly Fish, The story of, Dec, p 579.
Jelly-making, pectin and sugar, Apr, p 200.
Remedying the carelessness which leaves older goods on jobbers' shelves, June, p 278.
Johns, C. O., A. J. Fink and D. Breese Jones—
Making a nutritionally balanced bread, Aug, p 394.
Johnson, Alice A. and Henrietta W. Colvin—
Food work for commercial high school girls Mar, p 140.
Johnson, Felix S. S.—
Canada's pure food regulations, May, p 228.
Johnston, Ruth—
Studies of citrus pectin gels, May, p 249.
Jonas, Esther H.—
Teaching business girls to live, Mar, p 129.
Jones, Alfred H.—
Model vinegar bill now in force in Illinois, Jan, p 39.
Jones, D. Breese, C. O. Johns and A. J. Fink—
Making a nutritionally balanced bread, Aug, p 394.

K

Kamper, F. E.—
How to increase the consumption of canned foods, Feb, p 74; The Keystone of business, July, p 315; The education program of the retail grocers, July, p 324.
Katz, M., changes firm, June, p 306.
Keeping house at school, May, p 233.
Kitchin, C. W., and Caroline B. Sherman—
A public market that performs a public service, Mar, p 113.
Klawiter, Frances S.—
The poetry of home work, Aug, p 385.
Klein, Gertrude—
The care of food, and Milk, poems, May, p 239.
Kohl, Henry—
Canned foods twenty per cent of chain store sales, Feb, p 75.
Kohman, E. F.—
Oxygen in canned fruits, May, p 250.
Kohman, Edward F.—
Protection of vitamine C in foods, Mar, p 146.

L

Laboratory—
A new experiment in cooperation between manufacturer and, Feb, p 61.
Laboratory man—
Place of the in the world of food economics, Jan, p 13.
LaGanke, Florence—
Big idea in home economics, June, p 281.
Lard, popular in Mexico, Feb, p 95.
Lewis, Elizabeth—
A day in Happytown, Mar, p 130.
Leyburn, Margaret Kerr—
Poster aids for home economics, Oct, p 479.
Leitsch, William C., dies, May, p 256.
Linden, Bernard A. and Albert C. Hunter—
An investigation of oyster spoilage, Nov, p 538.
Los Angeles, Home economics in, May, p 236.
Love, Jessie M.—
Play as an organizer, Aug, p 386.
Lynch, Alice—
The game of health in upper grades, Aug, p 378.

M

Macaroni—
American package association passes on suggestion for specialty advertising, Apr, p 175; What the macaroni industry has accomplished, June, p 273.
Macaroni Association—
Re-election of officers of, July, p 320.
MacDonald, Elizabeth—
The home as the center of home economics education, Oct, p 477.
MacNab, Mac—
Nellie O, June, p 280.
Maine regulates the sale of vinegar, May, p 258.
Male, Elizabeth, and Ida Wholey—
Keeping house at school, May, p 233.
Maltose—
The formation of, in sweet potatoes in cooking, Nov, p 519.
Mancill, Bessie M.—
Pupil demonstration in cookery, Mar, p 140.
Manufacturing—
The three "R's" in, June, p 267.
Maple sugar—
Thirteen states produce nearly all, Mar, p 154.
Margarin—
Danish butter makers each, Jan, p 42; Difficult to export from Denmark, Feb, p 100; Need for research laboratory to study trade problems is discussed by speakers at fourth annual convention, July, p 321; Whale oil not adapted to manufacture of, Aug, p 402.
Margarin industry—
What it has accomplished Feb, p 93; Netherlands industry growing, Apr, p 202; Companies combine, July, p 352; Manufacturing methods in the, Dec, p 587.
Margarin manufacturers—
Meeting of, in Atlantic City, July, p 321.
Maryland—
Food and drug commissioner discusses uniform food legislation, Jan, p 8.
Matteson, Emma B.—
Fun in the health class, June, p 284.
McCann, H. K.—
What does advertising accomplish, Sept, p 413.
McCollough, E. W.—
"Three R's" in manufacturing, June, p 267; Value of statistics to the food manufacturer, Aug, p 367; What cost accounting means in food manufacture, Sept, p 417; Simplification and standardization, Oct p 466.
McCollum, E. V.—
Essential training for nutrition work, Dec, p 575.
McLaurin, J. H.—
Rising prices—and how to meet them, Aug, p 371.
McLeod, Sarah J.—
Budgets and better health, June, p 287.
McNair, M. P.—
Operating expenses standardized for grocer, Aug, p 365.
Meal planning, A simple guide for, Apr, p 184.
Meat—
Leibig looking into Kenya possibilities, Jan, p 42; Per capita consumption of, in United States steadily increasing, Jan, p 44; Wholesale, prices close to 1913 levels, says Charles E. Herrick, Jan, p 46; American meat used less in Austria, Mar, p 151; Record consumption for 1922, Mar, p 158; Diminishing demand in France for frozen meat, Aug, p 400; Need for frozen meat in Germany, Aug, p 402; Campaign planned to popularize meat, Aug, p 404; "Red Hots" instead of "Hot Dogs," Aug, p 404; The standardization of meat grades, Oct, p 502; The value of, in the diet, Dec, p 559.
Meat Packing—
Industry announces launching of development plan, Feb, p 102; Paraguayan plant reopened, Mar, p 152; Meat Packers' institute starts, Mar, p 153; Argentine government buys plant, Sept, p 450; Meat packers hold eighteenth meeting, Oct, p 496.
Mendel, Lafayette B.—
The place of the laboratory man in the world of food economics, Jan, p 13.
Mennen case—
Decision in, injects sense into resale price situation, Apr, p 179; Resale prices sustained in, Apr, p 206.
Menu-making, Practical work in, June, p 284.
Merchandising—
A valuable service, Oct, p 467.
Merrell-Soule Company—
Helped by home economics work, Jan, p 22.
Merriam, Carolyn Howe—
Health work in summer play schools, Feb, p 77.
Milk—
Government adopts standards on condensed, evaporated and concentrated, Jan, p 12; Africans may enter condensed milk business, Feb, p 95; Switzerland offers market for malted milk, Feb, p 100; Progress of the powdered milk industry, Mar, p 115; A milk for health song, Mar, p 132; Foreign milk reaches broader markets, Mar, p 151; Government seeks canned milk, Mar, p 151; New standards for canned milk in England, Mar, p 156; Milk for health campaigns, Apr, p 194; Condensed milk popular in China, Apr, p 202; Model milk ordinance proposed in New York, May, p 228; Use of Endo's medium in locating milk contamination, June, p 295; Effects of humidity on milk processes, July, p 348; Some facts about powdered milk, Aug, p 368; Milk—pro and con, Sept, p 446; Milk—pints or quarts, Sept, p 450; Dried milk, Sept, p 454; The value of milk demonstrated, Oct, p 480; Milk for the whole world, Nov, p 525; Condensed milk, Nov, p 527; More milk fairies, Nov, p 532; The milk campaign and the domestic science teacher, Dec, p 571; Correction in story of condensed milk, Dec, p 576.
Milk Association—
"Nucoa" wins injunction against, Oct, p 498.
Milk pasteurization—
Control of, Dec, p 585.
Mitchell, Dr. Helen S.—
The value of calcium in the diet, Oct, p 463.
Moore, H. C.—
A steelyard's support for traveling food inspectors, Apr, p 174.
Moore, Susa P.—
How the health journal helps the teacher, Oct, p 480.
Morris, Sophia—
Sleep, a poem, May, p 239.
Mother Hubbard's birthday party, May, p 240.
Moulton, C. Robert—
The value of meat in the diet, Dec, p 559.
Muffin contest, A, July, p 330.
Mushroom paste, A new delicacy, Aug, p 400.

N

National Biscuit Company—
Some food problems reflected in the biscuit industry, Mar, p 125.
National Canners' Association—
Work of has placed the trade in the forefront, Jan, p 15; Convention, Atlantic City, Feb, p 65; Buffalo gets next convention, May, p 254.
National Dairy Association elects president, Jan p 42.
National Food Brokers' Association holds meeting, Apr, p 203.
National Paper Box Manufacturers' Convention—
Trade exposition at, Apr, p 204.
National Wholesale Grocers' Association—
One way in which the group may serve the individual June, p 278.
New Hampshire—
Chief of food and drugs division dis-

cusses uniform food legislation, Jan, p 39.
New Jersey—
Health director discusses uniform food legislation, Jan, p 8.
New York—
Farm and market commissioner discusses uniform food legislation, Jan, p 8; Teaching the rules of health in New York City schools, Jan, p 29; New York State Department of Farms and Markets moves, May, p 254.
"Nucoa" wins injunction against milk association, Oct, p 498.
Nutrition—
A nutrition week in high school June, p 287; Material for nutrition group, June, p 289; The family as a basis for nutrition study, July, p 334; Commercial nutrition work among children, Aug, p 382; A case history in the Borden nutrition class, Aug, p 385; Grade teachers study nutrition, Oct, p 475; The teacher of nutrition, Oct, p 479; Clothing as a factor in, Nov, p 523.
Nutrition News—
Monthly letter of home economics teachers in San Francisco, Apr, p 184.
Nutrition workers—
Training for, June, p 292; Preparing nutrition teachers, June, p 283: Essential training for nutrition work, Dec, p 575.
Oleomargarine—
Rulings on its use adopted by many states, Aug, p 400.
O'Connell, Helen V.—
The health project in the lower grades, Aug, p 376.
Olive crop, Seville's, Mar, p 152.
Olive oil—
Italy yields supremacy in, Apr, p 202; Spanish industry forges ahead, Aug, p 397.
Open air school work in Springfield, July, p 340.
Operating expenses standardized for grocer, Aug, p 365.
Organization Advantages of, Aug, p 374.
Oxygen in canned fruits, May, p 250.
Oyster spoilage—
An investigation of, Nov, p 538.

P

Packages—
New style, tight-wrapped, June, p 272; Round versus square, Dec, p 564; Silicate of Soda improves, Dec, p 592.
Palm, Macra E.—
How to tell a real prince, June, p 282.
Palmer, Gladys F.—
School of Commerce methods, July, p 331.
Palmer, Irene—
The family as a basis for nutrition study, July, p 334.
Parke, Berne A.—
Difficult to get concerted action on uniformity of food legislation, Jan, p 8.
Parker, Mary E.—
Preparing nutrition teachers June, p 283.
Pasteurization must be followed by careful handling, Mar, p 149.
Patents—
Jan, p 48; Feb, p 103; Mar, p 158; May, p 258; June, p 306; July, p 354; Aug, p 404; Sept, p 452.
Patten, Louise—
Relation of food to art work, July, p 328.
Peanut butter—
Use of, as standard food is growing, Mar, p 149.
Peas—
Suggest grading of, on label, Feb, p 92.
Pecans—
A place for, in the dietary, Aug, p 373.
Pectin—
Pectin, jelly-making and sugar, Apr, p 200; Some facts about, July, p 348; Pectin, jams and jellies, Dec, p 594.
Pennsylvania enforces pure food law, Aug, p 397.
Petty, A. Bell—
Solving a thirty-minute problem, July, p 330.
Philadelphia Dairy Council—
Interview with Robert Balderston, Apr, p 181.
Philadelphia schools—
Food and health education in, Mar, p 133.
Physical education—
Recent advances in, Nov, p 550.
Physical science—
Obligations in, Dec, p 594.
Pickles—
Pickle products decrease, Mar, p 156; Advance in price predicted, Sept, p 454.
Pimentoes—
Science brings, to our canneries, Aug, p 373.
Poisoning from poor coal Apr, p 174.
Portion cards, One hundred caloric, May, p 238.
Portraits—
Allan P. Ames Apr, p 169; James A. Anderson, Mar, p 121; S. Henry Ayers, Sept, p 421; E. H. S. Bailey, Nov, p 517; Helen Rich Baldwin, Aug, p 383; Edward M. Barrows, Sept, p 430; F. D. Bristley, Oct, p 495; Henrietta W. Calvin, Mar, p 133; Walter G. Campbell, Jan, p 9; Melvin T. Copeland, Aug, p 366; Felix Coste, Apr, p 168; Agnes Houston Craig, July, p 327; R. U. Delapenda, Mar, p 120; Dr. Walter H. Eddy, Jan, p 48; Dr. Leo K. Frankel, Sept, p 426; Maurice Frycfield, Sept, p 415; Frank E. Gorrell, Jan, p 17; Carlotta C. Grier, May, p 286; Mary Reed Hartson, Aug, p 370; J. W. Herscher, Jr., Aug, p 367; Emma A. Jacobs, Mar, p 127; Alice A. Johnson, Mar, p 137; Francis E. Kamper, July, p 325; C. W. Kitchin, Mar, p 133; J. H. McLaurin, Aug, p 371; M. P. McNair, Aug. p 365; Lafayette B. Mendel, Jan, p 13; Dr. Helen Mitchell, Oct, p 463; James Moore, Jan, p 17; Susa P. Moore, Oct, p 480; C. Robert Moulton, Dec, p 559; Helen V. O'Connell, Aug, p 375; L. A. Rumsey, Oct, p 468; Caroline B. Sherman, Mar, p 114; W. W. Skinner, Jan, p 11; F. C. Soule, Jan, p 22; Louise Stanley, Dec, p 580; Charles Thom, Jan, p 10; H. F. Thunhorst Dec, p 562; Adelaide Laura Van Duzer, June, p 279; Charles P. Whiteman, Mar, p 121; Daniel P. Wooley, July, p 325.
Posters—
Poster club to teach nutrition classes, Apr, p 189; Poster talks for 8-B girls, May, p 238; Poster service valuable in teaching health subjects, Sept, p 435; Poster aids for home economics, Oct, p 479.
Potato flour trade, Dutch losing their, Jan, p 41.
Poultry—
Undrawn keeps better than drawn, Sept, p 452.
Practical arts classes—
Solving a thirty minute problem, July, p 330.
Practical cookery lessons in high school, Sept, p 431,
Practical dietetics pays the coal bill, Nov, p 530.
Preische. Gertrude—
Poster club to teach nutrition classes, Apr, p 189.
Prescott, Samuel C.—
The carbon dioxide treatment of foods, Oct, p 489.
Price decline guarantee—
Wholesale grocers cited in, Feb, p 99.
Product, Selling the other man's, July, p 324.
Protected shipment—
What the phrase means, Jan, p 14.
Prunes—
Serbian producers try to improve quality of, Sept, p 452.
Public Market that performs a public service, A, Mar, p 113.
Pumpkins—
What you should know about, Feb, p 75.
Pure food law—
Pennsylvania enforces, Aug, p 397.
Pusak, Kathleen—
The vegetable meeting, a poem, June, p 291.
Puzzles for pleasure and profit, Sept, p 433.

R

Raisins—
New uses for raisins and raisin waste considered, May, p 252; The American grows in popularity, May, p 254; The chemistry of the, Nov, p 540.
Raisin bread liked by Swiss, May, p 202.
Raw products—
Plan for United States grading of, Dec, p 594.
Reason why, The, Apr, p 195.
Recitation—
Socializing the, Nov, p 521.
Research work—
Value of in the food industry, Jan, p 21.
Restaurant Association, Convention of, Sept, p 422.
Retail Grocers' Convention screduled for St. Paul, June 23, 1923, Jan. p 50.
Rice—
Facts about, given by foods economist, Jan, p 19.
Rider. Jane H. and A. D. Sibbold—
Two more comments on uniform food legislation, Mar, p 122.
Rising prices—
How to meet them, Aug, p 371.
Robinson, S. K.—
The value of cheese in the diet, Mar, p 117.
Rose, Mabel M.—
Health game, Feb, p 84; Health stories and plays, Apr, p 185; Mother Hubbard's birthday party, May, p 240; The wonderful tonic. June, p 290.
Rose, R. E.—
Declares uniform food laws not practical, Jan, p 7.
Rumsey, L. A.—
"Toast for breakfast"—a campaign slogan, Oct, p 468.

S

Salt—
Making, from San Francisco Bay, Apr p 178.
San Francisco—
Schools building up underweight school children, May, p 231.
Sardines—
Fishing for, with electricity, Mar, p 154.
Sausage company charged with unfair competition, May, p 256.
Scallops—
Shipments of soaked scallops are stopped, Apr, p 206.
Schaeffer, C. E.—
New-style, tight-wrapped packages, June, p 272.
Schnemayer, Susanna—
Promptness and health Nov, p 524; The story of the Jelly Fish, Dec, p 579.
Scholarships—
East Harlem teachers win, Aug, p 375.
School lunch—
Selecting a well balanced, May, p 235.
Schroeder, Agnes H. and William M. Champion—
Carrying health to the home, June. p 285.
Seal and sealing machine, May, p 254.
Self-rising flour—
Fight for legal regulation of, renewed, Sept, p 424.
Seventh grade party, A, Mar, p 132.
Seymour. Gertrude—
The nation's food and the law makers, Nov, p 515.
Shark, dried, African delicacy, Mar, p 151.
Sherman, Caroline B.—
Some facts not shown by shipping tables, May, p 224.
Sherman, Caroline B., and C. W. Kitchin—
A public market that performs a public service, Mar, p 113.
Shipping tables—
Some facts not shown by May, p 224.
Sibbold, A. D., and Jane H. Rider—
Two more comments on uniform food legislation, Mar, p 12.
Silicate of Soda improves packages, Dec, p 592.
Sirup—
Utilize sweet potatoes for, Aug, p 404.
Skinner, Dr. W. W.—
Principles to be observed in standardizing foodstuffs, Sept, p 441.
Slausen grocery business changes hands, May, p 254.
Small, William—
The need for cooperation. June, p 276.
Smith, Russell S.—
Control of milk pasteurization Dec, p 585.
Soda water—
Government adopts standards on, Jan, p 12.
Sorghums—
Starch content of, computed, Aug, p 372.
Soule, F. C.—
How home economics work helped the food manufacturer, Jan, p 22.
Sources of material—
Suggestions to teachers regarding, Jan, p 30; Feb, p 81; Mar, p 142; Apr, p 195; May, p 246; June, p 292; July, p 342; Aug, p 388; Sept, p 438; Oct, p 484; Nov, p 534; Dec, p 582.
Spanish olive crop, Increase in, Sept, p 450.
Spanish olive oil—
Industry forges ahead, Aug, p 397.
Specialty men—
Accomplishments of the, Oct, p 471; The, and the grocer, Dec, p 562.
Spice grinders, Meeting of, Nov. p 542.
Spinach—
Canned as a source of botulism, Jan, p 33.
Spoilage—
A study of the, of hams and other pork products, Apr, p 197.
Springfield—
Open air school work in, July, p 340.
Standardization, The question of, Dec, p 568.
Stanford University Food Research Institute surveys wheat products and the baking industry, Mar, p 148.
Stanley, Louise—
The housekeeper, a consumer and a producer, Dec, p 580.
Statistics—
Their value to the food manufacturer, Aug, p 367.
Stitching machine for containers has a large capacity, Jan, p 38.
Storm, Rose—
Practical dietetics pays the coal bill, Nov, p 530.
Strang, Ruth—
Teaching the rules of health, Jan, p 29; Puzzles for pleasure and profit, Sept, p 433.
Stronk, H. N.—
Principles of industrial organization, Nov, p 513.
Strumpler, Edyth and Dorothy Edwards—
Open air school work in Springfield, July, p 340.
Supplementary reading for domestic science teachers, Feb, p 80.

Sugar—
  Dutch East Indies government aids development, Jan, p 41; A survey of production, Mar, p 156; Purest, should be used for bottling, Apr, p 178; Is there a solution of the sugar situation, July, p 326.
Sugar refinery—
  Construction of, for the south, Aug, p 404.
Sullivan, A. L.—
  Suggests plan for bringing about uniform food legislation, Jan, p 8.
Sun-Maid Raisin Growers refinanced, May, p 228.
Supplee, G. C.—
  Progress of the powdered milk industry, Mar, p 115.
Sweet potatoes—
  Sirup now made from, Aug, p 404; The formation of maltose in, on cooking, Nov, p 519.
Swelland, Cornelius Soule, dies, June, p 306.
Swells question, Both sides of the, Dec, p 565.
Sykes, Ruth W.—
  Experiments in cookery, Sept, p 431.

T

Tarr, L. W.—
  Acids in fruit jellies, May, p 250.
Taylor, Coley B.—
  New work in food research planned, Sept, p 421.
Taylor, William A.—
  How Bureau of Plant Industry helps canners, Feb, p 69.
Tea—
  Drink resembling, made from Cassina plant, Jan, p 11; Tea and coffee honor roll, Jan, p 32.
Tea packing, Cooperative, in Formosa, Mar, p 152.
Technologist—
  The place of, in the world of food economics, Jan, p 13.
Thom, Charles—
  What constitutes spoiled food, July, p 343.
Thom, Charles, Ruth B. Edmondson and L. T. Giltner—
  Canned spinach as a source of botulism Jan, p 33; Experiments with bacillus (clostridium) botulinus under household conditions, Mar, p 113.
Thunhorst, H. F.—
  The grocer and the specialty man, Dec, p 562.
Tin plate—
  Inferior quality of, deplored by packer, Mar, p 150; Standards for, urged by canners, July, p 319.
"Toast for breakfast," a campaign slogan, Oct, p 468.
Tolum, Helen I., and Mrs. Margaret Ells—
  Reaching into the home, Aug, p 386.
Tomatoes—
  Tampico exports, May, p 251.
Tomlinson, Roy E.—
  Some food problems reflected in the biscuit industry, Mar, p 125.
Tonic, The wonderful, June, p 290.
Topics for discussion, proposed by teachers, Jan, p 31.
Trade commission complaint involves use of name, Mar, p 154.
Trade-mark—
  Adapting your, to export markets, Nov, p 548.
Trade Paper—
  The place of the, in modern business, Nov, p 509.
Transportation—
  The situation today, Dec, p 563.
Tressler Donald K.—
  Fish as food, Oct, p 490.
Tuckey, Ruthe E.—
  Practical demonstration in cooking for health, Mar, p 132.

U

United States Department of Agriculture—
  Appointment of Director of Regulatory work, Sept, p 452.
Utensils—
  Lessons on, in continuation school, July, p 337.

V

Vail, James G.—
  Silicate of soda improves packages, Dec, p 592.
Van Duzer, Adelaide Laura—
  Teaching wise choice of foods, June, p 286.
Van Norman, H. E.—
  Elected president National Dairy Association, Jan, p 42.
Vegetables—
  Importance of haste in handling fruits and vegetables, Mar, p 148; The vegetable meeting, a poem, June, p 291; Government to inspect fruits and vegetables, July, p 352.
Vegetable oils and fats—
  Edible, government adopts standards on, Jan, p 38.
Vinegar—
  Member of dairy and food division discusses model vinegar bill for Virginia, Jan, p 8; Model vinegar bill now in force in Illinois, Jan, p 39; Consumers getting much impure, Feb, p 89; Maine regulates sale of, May p 258; The uniform vinegar law, Nov, p 550.
Vitamin B—
  A factor in nutrition, Sept, p 446.
Vitamin C—
  The protection of, in foods, Mar, p 146
Vocational education meeting in Buffalo, Nov, p 530.

W

Walnut production large, Jan, p 41.
Washington—
  Teaching food and health education in, Mar, p 127.
Waxed papers—
  A more convenient package for, Jan, p 50.
Week's lunches for $1.00 A, June, p 286.
Weight—
  An indication of health, Mar, p 131; New arbitrary weight lists, Mar, p 156; Building up underweight school children, May, p 231.
Weiner, P. S.—
  Manufacture of maraschino type cherries, Sept, p 444.
Whale oil not adapted to margarin manufacture, Aug, p 402.
What Our Readers Say—
  Comments on Food Technology department, Feb, p 88; Consumers getting much impure vinegar, Feb, p 89; Caffeine in mate, Apr, p 196; The Douglas Packing Company decision, May, p 250.
Wheat—
  Stanford University Food Research Institute surveys wheat products and the baking industry, Mar, p 148; Putting the "eat" into, May, p 229; A suggestion for meeting the wheat situation, Aug, p 374; Wheat situation discussed by research committees, Aug, p 404; Shortage of, in New Zealand, Sept, p 454.
Wheat Council—
  Formation of permanent, of the United States July, p 354.
Whey, dried, may be profitable, Jan, p 38.
White, F. E.—
  Heads Armour concerns, Jan, p 46.
Whiteman, C. P.—
  The high calling of the food broker, Dec, p 557.
Wholey, Ida, and Elizabeth Male—
  Keeping house at school, May, p 233.
Wichum, Victor—
  Automatic heat control, June, p 270.
Wight, Nellie M.—
  Assembly program on health, Feb, p 82.
Willard, M. L.—
  The chemistry of the Raisin, Nov, p 540.
Willy, Louise A.—
  The hotel dietitian, her status, her work and her problems, Sept, p 437.
Wilson, Eugenia—
  Practical cookery lessons in high school, Sept, p 431.
Woolley, Daniel P.—
  Selling the other man's product, July, p 324; The story of yeast, Dec, p 573.
World's Dairy Council—
  Meeting of, Sept, p 423; The, and the domestic science teacher, Oct, p 483.
Wright, C. E.—
  What the California Fruit Product Industries have accomplished, July, p 317; The place of the trade paper in modern business, Nov, p 509; What the margarin industry has accomplished, Feb, p 93.
Wyoming—
  Food and oil commissioner discusses uniform food legislation, Jan, p 39.

Y

Yeast—
  The story of, Dec, p 573.
Your product—
  Getting "for value received" from, May, p 229.

Z

Zoller, Harper F.—
  Disinfection in food products factories, May, p 247.

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A Plan for Obtaining Uniform Food Legislation

Elaboration of a Suggestion Which Was Made at the Convention of Food Control Officials

Comments of Some of the State Officers on Proposed Model Vinegar Bill and Other Matters Pertaining to Laws

IN our December issue we noted a suggestion from Dr. J. S. Abbott of the Institute of Margarin Manufacturers which embodied the germ of a constructive plan for hastening the day of uniform food legislation.

In the belief that our readers will be interested in a development of this idea and that such a discussion may well open the way to constructive co-operation we submit the following.

It seems to The American Food Journal that food control officials of the states and the Federal Government may effectively cooperate with one another and with the various industries engaged in the manufacture and marketing of foodstuffs in the United States by proceeding somewhat as follows:

(1) The food control officials could invite the various associations of the individual industries to prepare briefs clearly setting forth any difficulties such industries may have experienced in the labeling and marketing of their products in various jurisdictions.

(2) The industries might then submit such briefs to the Association of American Dairy, Food and Drug Officials and this association should in turn appoint appropriate committees for critical study of such briefs.

(3) The committees so appointed after completing their critical study of the briefs should confer with the authors on all points that seem to require illumination; they should then report back to the Association of American Dairy Food and Drug Officials with such recommendations as may seem to them proper and necessary.

(4) There should then be created a system of follow-up machinery to insure appropriate action on the recommendations of the committees.

The American Food Journal freely offers its pages for discussion of the above plan, inviting comment from members of all groups represented, food control officials executives in the various industries and any one else who may be interested.

Various comments have been received from state food control officials regarding not only the proposal of Senator Armstrong of the American and Vinegar Manufacturers' Association of a model vinegar bill (published in full in the December issue of The American Food Journal) but upon the whole general question of uniformity in food legislation. One of the letters, that from A. L. Sullivan, food and drug commissioner of Maryland, presents a suggestion for bringing about uniformity in food laws which is very much along the lines given in the plan suggested above. We present a number of the letters from food control officials in the hope that further comment may be forthcoming which will aid materially in bringing about a situation whereby some definite goal may be reached in this harassing subject.

Capt. Rose Declares Uniform Food Laws Not Practical

By Capt. R. E. Rose, State Chemist of Florida; former President Association of Dairy, Food and Drug Officials.

I NOTE with interest your editorial in your issue of November, 1922, in which you quote an excerpt from my address as president at the Kansas City convention.

You, however, fail to quote in this issue the reasons for my opinion that a uniform food and drugs law is not, at the present time, practical, as quoted in your report of my address in the October issue.

I inclose marked copies of my address at Miami in 1921, and Kansas City, 1922 in which I particularly discuss cooperation and uniformity in the execution of the laws, national and state.

My experience during the past twenty-two years in the enforcement of the food and drug and stock feed laws of the nation and the states, as a member of the committee on cooperation and on uniformity, has convinced me that such uniform laws are not practical.

However, the unanimous adoption of the following resolution at the Kansas City convention is a long step to- by national and state food officials will wards uniformity, which if held up to go far towards clarifying the differences between manufacturers of goods shipped in interstate commerce, and state food officials.

> RESOLVED: That the standards and definitions of dairy food and drug products, when approved by the National Joint Committee on Standards and Definitions of Dairy, Food and Drug products, when approved and promulgated by the Secretary of Agriculture, shall be adopted by the members of this association for their guidance in enforcing the dairy, food and drug laws of their respective states, or inter-state commerce in their respective states.

The great difficulty in having a uniform law adopted generally by the states is the fact that the execution of the state laws are under various departments and branches thereof—state agricultural commissions combined frequently with colleges and universities; state universities and dairy commissioner; commissioner of mines, manufacture and agriculture; boards of health and state medical departments; state board of health, food and drug commissioners, food and drug commissioner and experiment station, director of bureau of foods and drugs and agricultural experiment stations —I quote but a few instances of these diverse and conflicting state laws, each with certain more or less conflicting laws and authority; all of which would necessarily have to be changed in order to secure uniformity in state laws.

In this connection, I am pleased to note that at the recent convention of the Association of Feed Control Officials, November 13 and 14, that uniform rules, regulations, standards and definitions, labels and registration forms were particularly stressed.

The standards and definitions of the feed control officials are now generally adopted by the states.

Uniform regulations, labels, tags or stamps, guaranteed analyses, registration blanks, adopted by the control official under the general provisions of most, if not all, state laws would, in my opinion, relieve manufacturers of much annoyance and expense and protect the consumer of both interstate and intrastate shipments from questionable material.

Our fertilizer control officials, manufacturers and consumers of commercial fertilizer are also demanding uniform regulations, definitions, grades and standards; the effort to have generally adopted the uniform fertilizer law having failed, after years of effort; as have practically all efforts to make uniform laws of any kind for the various states.

The recent decision of the Federal Court of Cleveland, Ohio, in reference to misbranding vinegar (as shown on page 40 of your issue of December, 1922) upholds my position that the label should tell "the truth, the whole truth, and nothing but the truth."

This particular question is fully covered by a recent decision of the Secretary of Agriculture, holding that apple vinegar of cider vinegar was made only from the expressed juice of fresh apples, and that vinegar made from dried apples, skins, cores, etc., could not legally be called apple or cider vinegar.

Difficulties in the Way of Repealing Present Laws

J. D. BRICE
Director Department of Health of New Jersey

THE adoption of the proposed model bill for cider and vinegar, which has been prepared by William W. Armstrong, by the legislatures of the different states would prevent hardships suffered by the manufacturer because of variations in the laws. Practical difficulties stand in the way of the repeal of existing laws and the enactment of new legislation, however, unless a decided public demand forces the members of the legislature to consider the subject.

In the state of New Jersey legislation on vinegar is in close agreement with the model bill with the exception that certain minimum standards of solids, ash and alkalinity of ash are fixed. We can see no real need for a change in the laws of this state on vinegar in as much as the present laws do comply essentially with the uniform legislation purposed.

In reading over the proposed bill it appears that section two and section five are contradictory as section two does not permit the addition of substances or ingredients other than those derived exclusively from the fruit, grain, sugar or sirup from which it is made and section five permits the addition of water, by implication, at least.

Suggests a Plan for Bringing About Uniform Legislation

By A. L. SULLIVAN
State Food and Drug Commissioner of Maryland

I BELIEVE it will be an extremely difficult matter to bring about absolute uniformity in the different state laws. It does not appear necessary to give many reasons for this opinion. Suffice it to say that the population in one state is frequently different from that in another and people look upon things from a different viewpoint. In some states there is a very strong feeling for state's rights. In others people incline more toward centralized government. In some states a particular food industry is much more important than in others and legislation is frequently enacted favoring that industry. Some state officials undoubtedly believe their local laws superior to the federal law. Some state officials are more original and advanced in their ideas than others and incorporate some of their own ideas into the law.

I have found, however, during the last few years a tendency among most food officials to encourage uniformity of food laws. My suggestion therefore, in order to help this tendency along, would be as follows:

In the case of a product such as vinegar some association or some one properly qualified should summarize the different laws which now prevail in the states and point out wherein they are inconsistent with the federal law and then request the Association of Dairy, Food and Drug Officials to take the matter up at their annual meetings with the idea of urging upon all of the states the value of co-operation and the elimination of inconsistencies in the laws which are not vital. I am rather inclined to the belief that such a plan would eventually be more successful than for some one to come forward with a so-called uniform law. It may be found that in some cases an improved form of law will be desirable. I am not convinced however that the Federal Food and Drugs Act as it now stands is not sufficiently strong to prevent the sale of adulterated or misbranded vinegar.

The proposed uniform vinegar law suggested by Mr. William W. Armstrong covers the ground in a thorough manner and certainly should be satisfactory to manufacturers of cider vinegar.

To my mind the best feature of this law is found in that paragraph which requires that every person who sells vinegar in other than an unbroken package of the manufacturer shall plainly and conspicuously mark the container with the kind of vinegar so delivered.

I note that section 6 of the proposed law does not require the container to be marked with the quantity of vinegar therein, which is probably an oversight.

The provisions of the law making it illegal to color any vinegar and requiring that all compounds shall state the proportion of the mixture appear to me somewhat radical and raise the question in my mind whether they are desirable, unless similar legislation is applied to other food products.

Model Vinegar Bill to Be Introduced in Virginia

By F. C. BREAZEAL
Dairy and Food Division, Virginia

I HAVE read with much interest the model vinegar law suggested by Senator Armstrong, and after careful study of each section can see no reason why any honest manufacturer should object to any of the provisions of this law.

In so far as this division is concerned, we are ready to adopt it without a single change, and unless something better is suggested in the meantime, will make an effort to have it enacted into law at our next session of the legislature.

This division is on record as favoring sane and uniform laws for all of our food products.

Difficult to Get Concerted Action on Uniformity

By BERNE A. PARKE
Commissioner of Farms and Markets—State of New York

I HAVE read with interest your editorial headed "A Concrete Plan for Obtaining Uniform Cider and Vinegar Laws." Inasmuch as trade does not follow or confine itself to state lines, there is every reason why laws of the various states regulating trades and transactions should be uniform. With this principle practically all will agree. The difficulty lies in getting a concert

(Concluded on page 39)

Who's Who in the Bureau of Chemistry

An Outline of the Activities of the Various Laboratories and Description of the Qualifications of the Men in Charge

THE Bureau of Chemistry, one of the large and important bureaus of the Department of Agriculture, is the outgrowth of what was considered, at the time of its inception, a radical departure from the accepted theory of agricultural supervision.

In 1862, a few months after the Department of Agriculture was established, the Commissioner proposed that a chemist be employed. Some inquisitive congressmen wanted to know what there was for such an official to do in the Department of Agriculture, to which the Commissioner replied that in the experiments with new varieties of grapes there were analyses which could be made with profit. We smile now when we compare that feeble effort at justification with what the Bureau of Chemistry has done and what it is constantly doing.

The bureau as it is organized today employs more than three hundred chemists, bacteriologists, microscopists, engineers, and inspectors. Its annual appropriation is over $1,250,000. Its chief functions are along three main lines: Research, General Administration, and Regulation.

The work is under the general direction of Walter G. Campbell, Acting Chief of the bureau. Mr. Campbell has been with the bureau since 1907, when he was called from his work of assisting in enforcing the State food and drug laws of Kentucky, he was selected by Dr. H. W. Wiley, then chief of the bureau, as chief inspector to organize the inspection work under the Federal Food and Drugs Act, which became effective at that time.

Upon the reorganization of the Bureau of Chemistry in 1914, he was made chief of the eastern food and drug inspection district, and in December, 1916, was promoted to assistant chief. Mr. Campbell has been largely instrumental in organizing the field work of inspecting interstate and foreign commerce in food and drugs. When Dr. Carl L. Alsberg resigned as Chief of the bureau, Mr. Campbell was appointed Acting Chief.

He is an especially able administrative man, and it is to be regretted that he insists upon adhering strictly to the technicality in the law creating the bureau which requires that the bureau Chief shall be a chemist, and refuses to be made Chief in name as well as in deed.

Walter G. Campbell, Acting Chief of the Bureau

The research work is conducted mainly in the laboratories in Washington. To ascertain accurately when a food or drug is adulterated or misbranded, it is, of course, necessary to have suitable standards for comparison. Before the analyst can pass intelligently upon the samples submitted to him for examination, he must know the true composition of the articles which they purport to be. Consequently a large part of the scientific force of the bureau is engaged in the investigation of many natural products. Based upon the results thus obtained, the Department formulates definite standards for the guidance of the food and drug officials and manufacturers of the country.

To supplement this first type of research work investigations are undertaken to perfect various processes used in the preparation of foods and drugs, and to devise methods for the utilization of by-products heretofore wasted.

Of great economic importance to the American fruit grower is the bureau's project for working out ways to manufacture salable articles from the cull grapefruit, oranges, and lemons which too often constitute a total loss. To bring this about, methods are being devised for converting such culls into beverages, jam, marmalade, etc., for which a ready market exists.

Sugar Substitutes Contributed by Laboratory

Another important development growing out of research work was the introduction of sugar substitutes during the war. The experiments leading up to the use of these substitutes on a large scale were conducted by Dr. W. W. Skinner, at that time Chemist in Charge of the Water and Beverage Laboratory.

Dr. Skinner entered the service of the bureau in 1904, and has had considerable experience in agricultural chemistry, having been connected as a chemist with the Maryland Agricultural College, now a part of the University of Maryland, and the Arizona Experiment Station. He had charge of the beverage work of the bureau in the enforcement of the Food and Drugs Act from 1908 to the time of his appointment, during the present administration, to the post of Assistant Chief of the bureau, which position he now holds.

During the World War, when the scarcity of sugar threatened the life of the soft drink industry, as well as others dependent upon sugar, Dr. Skinner rendered a distinctive service to the country by the introduction of sugar substitutes.

Dr. Skinner and his associates in the Water and Beverage Laboratory, working to find a way out of the dilemma occasioned by the sugar shortage, conducted extensive experiments, the results of which revolutionized the industries concerned. Formulas, including such sugar substitutes as glucose, maltosa sirup, refiner's sirup, and corn sugar, were evolved. About 30,000 copies of these formulas were distributed, and it is believed that this was not only a tremendous advantage to the bottling industry, but an important factor in the war-time conservation of cane sugar.

At present Dr. Skinner is deeply interested in the formulation of official standards for food. He is Chairman of the Joint Committee on Definitions and Standards, the duty of which is to formulate definitions and standards for food products to be used as a guide by State, Federal and Municipal officials in enforcing regulatory laws. The committee consists of three representatives each from the Department of Agriculture, Association of Official Agricultural Chemists, and Association of American Food and Dairy Officials.*

Water and Beverage Laboratory

Since Dr. Skinner's appointment to the post of assistant chief of the bureau, the Water and Beverage Laboratory has been in charge of J. Walter Sale, who has been connected with the laboratory for a number of years, and worked with Dr. Skinner in developing the sugar substitute formulas.

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* A comprehensive outline of the organization, its plans and past accomplishments, appeared in an article by Dr. Skinner in the July issue of The American Food Journal.

Mr. Sale's training has peculiarly fitted him for the position he now holds. He received the degree of B.A. from DePauw University in 1907, and in 1909 Ohio State University conferred upon him the degree of M.A. In 1907 to 1908 he was a fellow in chemistry, and 1908 to 1909 instructor in analytical chemistry at Ohio State University.

As a chemist he made check analyses on mineral waters, salt brines, soft drinks, soft drink flavors and related products, when exceptional skill and experience were demanded, as for example, for use in court cases. As head of the Water and Beverage Laboratory, Mr. Sale supervises the regulatory work of the field stations, as it pertains to mineral waters, soft drinks and allied indusries.

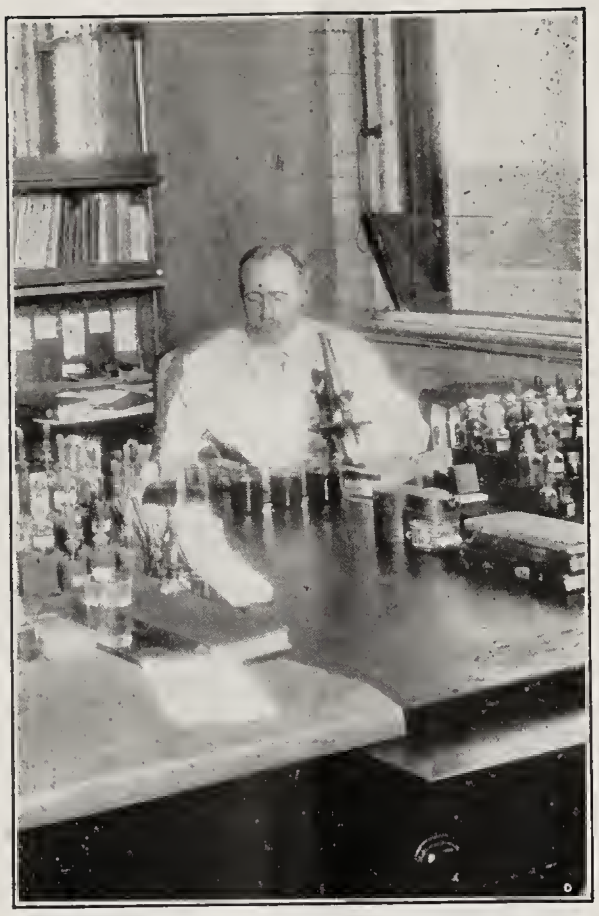
For many years it has been the practice of the Water and Beverage Laboratory to make careful inspection of mineral water sources, with a view to eliminating contamination at the points of origin. Much progress has been made, and the protection of the springs from contamination and the methods of handling the water have been greatly improved in some places. Chlorinating, ozonizing, and other methods of purification have been installed, and individual springs have been condemned and closed in several instances.*

The regulatory work of the bureau is carried on in the field stations, supervised by the officials in charge of the various laboratories in Washington.

Food Control Laboratory a Connecting Link

The Food Control Laboratory is the connecting link between the Washington offices and laboratories of the bureau engaged in the enforcement of the Food and Drugs Act, and the field stations of the bureau engaged in the same work.

Dr. Frederick C. Blanck, Chemist in Charge of the Food Control Laboratory, has had extensive experience as a chemist, particularly in relation to foods and drugs, in the commercial field. He received the degrees of B.A. and Ph.D. from Johns Hopkins University, and in 1907 to 1908, served as research assistant in the Department of Biological Chemistry at the Harvard Medical School. From 1911 to 1914 he was chemist and director of the Department of Health, Baltimore, Md., and in 1914, when the City of Baltimore created a Bureau of Food and Dairy Inspection, Dr. Blanck was made Chemist and Chief of the Bureau.



Dr. Charles Thom, Mycologist

Dr. Blanck was appointed organic chemist in the Bureau of Chemistry, July 21, 1915. He served as assistant to Dr. Emerson, formerly Assistant Chief of the bureau, his knowledge of chemistry and food and drug problems making him extremely valuable in this position.

Work of the Food Control Laboratory

As new problems arise involving unusual types of adulteration or misbranding, the Food Control Laboratory assists in elaborating new methods of analysis for their detection.

The laboratory also makes numerous miscellaneous analyses of food products submitted to the bureau in Washington, both by the field stations for check examination, or where the field has not adequate information or facilities for carrying on the work, and by organizations such as the General Supply Committee, and the Army, Navy and Marine Corps.

Where necessary the Food Control Laboratory also reviews testimony collected in connection with cases prepared for prosecution under the Food and Drugs Act, and counsels the administrative officials of the bureau on the trial of such cases.

Dr. Blanck, as Chemist in Charge of Food Control, is responsible for all of these activities. He is also one of the Department's representatives on the Joint Committee on Definition and Standards, of which Dr. Skinner is Chairman.

Carbohydrate Laboratory an Important Unit

The Carbohydrate Laboratory, under the direction of Howard S. Paine, Chemist in Charge, is now and always has been one of the most important units of the Bureau of Chemistry. In fact the bureau itself, as the Division of Chemistry, first attained prominence through its special efforts to improve and develop the sugar industry in the United States.

Mr. Paine, after graduating from Ohio State University with the degree of B.S., and extended post-graduate work at the University of Missouri and George Washington University, was employed as chemist with several industrial concerns prior to his connection with the Bureau of Chemistry.

Problems involved in sugar and sirup production are among the most intricate in the fields of organic and physical chemistry. Some of the most distinguished chemists who have been connected with the Bureau of Chemistry have been associated with this work.

Mr. Paine apreciated the difficulties which were being encountered by the sugar industry in their inability to obtain a satisfactory yield. The importance of manufacturing cane sirup so that it might be marketed throughout the country, heretofore not possible due either to crystallization if carried to a point of too great density, or to fermentation if not sufficiently condensed, had tremendous economic significance, particularly in the South.

After exhaustive study and extensive tests, Mr. Paine developed the invertase method to a point where it could be used successfully in the manufacture of cane sirups. In order to demonstrate this method for making sirup of improved keeping quality, a considerable amount of invertase, prepared from yeast in the laboratory, was furnished to cane-sirup producers who expressed an interest in the process, and a chemist was sent south to assist the sirup producers in the use of this new method.

Studies in beet-sugar technology from a chemical standpoint are being carried out in the field in co-operation with beet-sugar factories. This investigation has for its object the critical study of various impurities derived from the beets and the determination of the role played by these impurities in certain factory troubles.

The method for the production of an edible sirup from sweet potatoes, discovered by Mr. H. C. Gore, of the Bureau of Chemistry, in 1919, has been perfected and the commercial development of the process undertaken. Cost data and operating details are being learned, and the outlook for the establishment of a sweet-potato sirup industry is promising.

Fermentation and spoilage are important factors in the waste and deterioration of food products. In the enforcement of the Food and Drugs Act it is necessary to take cognizance of the spoilage of foods, since such foods, so far as they are "filthy, putrid or decomposed," are declared by the Act to be adulterated.

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*Mr. Sale recently collaborated with Dr. Skinner in the series of articles on "Food Flavors: Their Source, Composition and Adulteration," the conclusion of which appeared in the December issue.

Establishment of Bacteriological Laboratory

A laboratory specializing in the study of the problems of the fermentation industries and in the study of the causes of food spoilage did not exist in this country prior to 1913, when the Bacteriological Laboratory of the bureau was converted into a laboratory of microbiology devoted to such studies.

Dr. Charles Thom, Mycologist in Charge of the Microbiological Laboratory, has made a special study of micro-organisms that affect foods. Before his appointment as head of this laboratory, Dr. Thom was instructor in biology and botany at the University of Missouri.

The recognition of botulism in the United States, through the work of Dickson in California about 1914, furnished the basis for instituting in the bureau a study of food poisoning. Dr. Thom has pursued this study persistently for several years with gratifying results.

Two years of fundamental work were done in the laboratory, with the co-operation of the Bureau of Animal Industry, before it became generally recognized that foods coming within the jurisdiction of the Food and Drugs Act might produce botulism. Studies in this laboratory have shown that the presence of this organism has caused poisoning from eating canned asparagus, canned olives, and canned spinach. Dr. Thom has made every effort to establish as fully as possible the character of precautions necessary to protect the consuming public from the danger of this type of poisoning, and the information has been disseminated widely.

The laboratory has also been carrying on a continuous study of saprophytic molds responsible for spoilage ly true for such finely ground foods as and fermentation. So far as possible, a careful survey of the mold flora of every food product coming into the bureau for inspection is made. Thus, in time, full information concerning the normal flora of many kinds of foods will be accumulated. In the course of this work a large collection of authentic material is furnished to investigators the world over.

Personnel of Microchemical Laboratory

In many cases chemical and bacteriological analyses fail and only the microscope is capable of giving the desired information. This is especally true for such finely ground foods as cocoa, ground spices, and cattle feeds, as well as tomato and fruit products made from decomposed stock. Without the work of the Microchemical Laboratory the control of such products under the Food and Drugs Act would not be possible.

Dr. W. W. Skinner, Assistant Chief

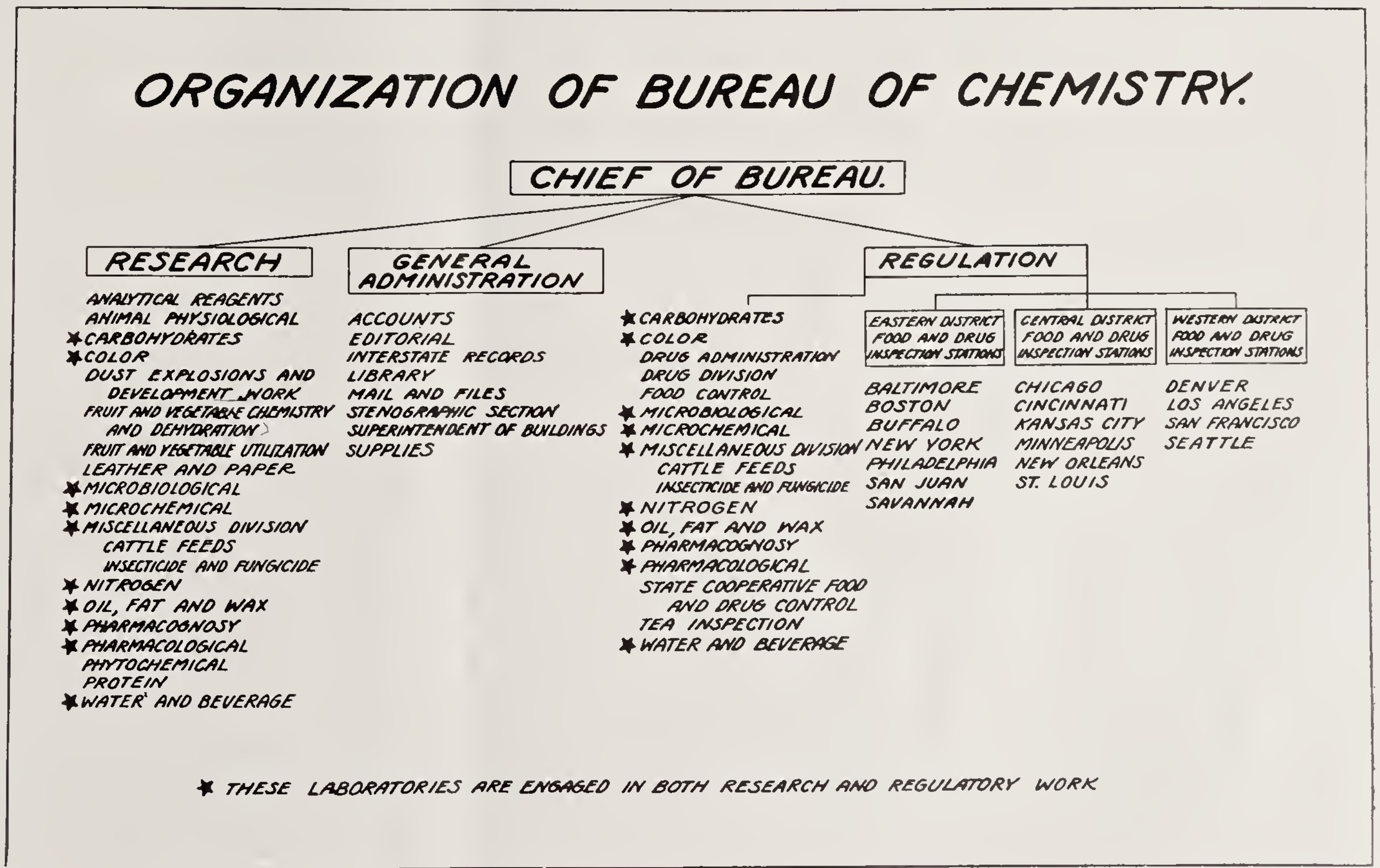
Mr. Burton J. Howard, Microscopist in Charge of the Microchemical Laboratory, entered the Department of Agriculture in April, 1901, and has been in charge of the laboratory continuously since that time. His achievements since he has been with the Bureau of Chemistry have been many, chief among them being the microscopical studies of tomato products, resulting in the present efficient and effective method of regulation. This work entailed years of study, both in the Washington laboratory and in factories producing tomato catsup, canned tomatoes, etc. A great many tests at factories were made by noting the general condition of the stock and then examining microscopically samples of the finished product.

This laboratory has also devised methods for the detection in food products of decomposed beans and fruit, for the estimation of cocoa shells in cocoa, cottonseed hulls in cottonseed meal, rice hulls in rice bran, powdered daisy flowers in insect powder, and mowrah meal in insecticides. It has made studies of insect powder, of domestic and imported veratrum (hellebore), and of calcium oxalate crystals in the drugs of the United States Pharmacopoeia, and has worked out a microscopical method for determining the relative amounts of offal in flours as a basis for flour grading.

Since the staff of the Microchemical Laboratory represents the only group of experienced general microscopists in the Government service, it is called upon by other departments, particularly the Post Office and War and Navy Departments, to examine a wide variety of materials. Its help is solicited especially in the determination of the kind and character of the fibers found in various textiles, including twines and ropes, in which field it has had much experience.

Beverage Resembling Tea Made from Cassina Plant

Laboratory investigations by the Bureau of Chemistry, United States Department of Agriculture, have shown that a very delightful beverage resembling tea in many respects can be made from cassina, a wild plant that grows abundantly in the South Atlantic and Gulf States from Virginia to Texas, when the leaves of the plant are treated by processes similar to those used in curing tea.



Government Adopts Food Standards

Secretary of Agriculture Formally Approves the Work of the Joint Committee on Definitions and Standards

STANDARDS and definitions for butter, condensed milk, cacao products, ginger ale and ginger ale flavor, cayenne pepper, oil of cassia, and breads, were adopted by the Secretary of Agriculture upon the recommendation of the Joint Committee on Definitions and Standards for the guidance of Federal officials in the enforcement of the Federal Food and Drugs Act. These standards become effective at once.

The standards and definitions have been adopted by the Association of American Dairy, Food and Drug Officials and the Association of Official Agricultural Chemists and will be used generally by state officials in the enforcement of state food laws.

The texts of the standards and definitions as adopted follow:

Butter

Butter is the clean, sound product made by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also includes a small portion of the other natural milk constituents, with or without salt, and contains, all tolerances provided for, less than sixteen per cent (16.0 per cent) of water, and not less than eighty per cent (80.0 per cent) of milk fat. By Acts of Congress, approved August 2, 1886, and May 9, 1902, butter may also contain added coloring matter.

Renovated butter, process butter, is the clean, sound product made in semblance of butter from melted, clarified or refined butter-fat, without the addition or use of any substance other than water, milk, cream, or salt, and contains, all tolerances provided for, less than sixteen per cent (16 per cent) of water, and not less than eighty per cent (80 per cent) of milk fat.

CONDENSED MILK, EVAPORATED MILK, CONCENTRATED MILK

Condensed milk, evaporated milk, concentrated milk, is the product resulting from the evaporation of a considerable portion of the water from milk, or from milk with adjustment, if necessary, of the ratio of fat to non-fat solids by the addition or by the abstraction of cream. It contains, all tolerances being allowed for, not less than seven and eight-tenths per cent (7.8 per cent) of milk fat, nor less than twenty-five and five-tenths per cent (25.5 per cent) of total milk solids; provided, however, that the sum of the percentages of milk fat and total milk solids be not less than thirty-three and seven-tenths (33.7).

GRAIN PRODUCTS

Bread

Bread is the sound product made by baking a dough consisting of a leavened or unleavened mixture of ground grain and, or other clean, sound, edible farinaceous substance, with potable water, and with or without the addition of other edible substances.

In the United States the name "bread," unqualified, is understood to mean wheat bread, white bread.

Wheat bread dough, white bread dough, is the dough consisting of a leavened and kneaded mixture of flour, potable water, edible fat or oil, sugar and or other fermentable carbohydrate substance, salt and yeast, with or without the addition of milk or a milk product, of diastatic and or proteolytic ferments, and of such limited amounts of unobjectionable salts as serve solely as yeast nutrients,* and with or without the replacement of not more than three per cent (3 per cent) of the flour ingredient by some other edible farinaceous substance.

Wheat bread, white bread, is the bread obtained by baking wheat bread dough in the form of a loaf or of rolls or other units smaller than a loaf. It contains, one hour or more after baking, not more than thirty-eight per cent (38 per cent) of moisture, as determined upon the entire loaf or other unit.

Milk bread is the bread obtained by baking a wheat bread dough in which not less than one-third (1-3) of the water ingredient has been replaced by milk or the constituents of milk solids in the proportions normal for whole milk. It conforms to the moisture limitation for wheat bread.

Rye bread is the bread obtained by baking a dough which differs from wheat bread dough in that not less than one-third (1-3) of the flour ingredient has been replaced by rye flour. It conforms to the moisture limitation for wheat bread.

Raisin bread is the bread obtained by baking wheat bread dough, to which has been added sound raisins in quantity equivalent to at least three (3) ounces for each pound of baked product and which may contain proportions of sweetening and shortening ingredients greater than those commonly used in wheat bread dough.

Brown bread, Boston brown bread, is a bread made from rye and corn meals, with or without flour, whole-wheat flour, and or rye flour, with molasses, and in which chemical leavening agents, with or without sour milk, are used instead of yeast.

In some localities the name brown bread is used to designate a bread obtained by baking a dough which differs from wheat bread dough in that a portion of the flour ingredient has been replaced by whole-wheat flour.

SODA WATER FLAVORS AND SODA, SODA WATER

Ginger ale flavor, ginger ale concentrate, is the flavoring product in which ginger is the essential constituent, with or without aromatic and pungent ingredients, citrus oils, and fruit juices.

Ginger ale is the carbonated beverage prepared from ginger ale flavor, sugar (sucrose) sirup, harmless organic acid, potable water and caramel color.

CACAO PRODUCTS

1. Cacao beans, cocoa beans, are the seeds of trees belonging to the genus Theobroma, especially those of Theobroma cacao L., and closely related species.

2. Cacao nibs, cocoa nibs, "cracked cocoa," are roasted or dried cacao beans, broken and freed from germ and from shell or husk.

3. Chocolate, plain chocolate, bitter chocolate, chocolate liquor, chocolate paste, bitter chocolate coating,* is the solid or plastic mass obtained by grinding cacao nibs and contains not less than fifty per cent (50 per cent) of cacao fat and, on the moisture—and fat-free basis, not more than eight per cent (8 per cent) of total ash, not more than four-tenths per cent (0.4 per cent) of ash insoluble in hydrochloric acid and not more than seven per cent (7 per cent)of crude fiber.

4. Sweet chocolate, sweet chocolate coating, is chocolate mixed with sugar (sucrose), with or without the addition of cacao butter, spices, or other flavoring materials, and contains, on the moisture-, sugar- and fat-free basis, no greater percentage of total ash, ash insoluble in hydrochloric acid, or crude fiber, respectively, than is found in moisture- and fat-free chocolate.

5. Milk chocolate, sweet milk chocolate, is the product obtained by grinding chocolate with sugar, with the solids of whole milk, or the constituents of milk solids in proportions nor-

(Continued on page 38)

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* The propriety of the use of minute amounts of oxidizing agents as enzyme activators is reserved for future consideration and without prejudice.

* Definitions and standards for alkalized products will form a separate schedule.

The Place of the Laboratory Man in the World of Food Economics

Mistaken Impression Exists Among Many Business Men as to Part Technologist May Play in Industry

By LAFAYETTE B. MENDEL
Professor of Physiological Chemistry, Yale University

THE day is rapidly passing when our food-producing and food-marketing organizations can afford to remain oblivious of the growing importance and the real role of the laboratory man in these industries. For many years most of the commercial enterprises dealing with foods in the United States were accustomed to look upon the chemist as essentially an analyst expected to "check up" the composition of the materials involved and perhaps also to insure the securing of a uniform product for manufacture or sale. Often his foremost function was to safeguard the character of the output and occasionally to protect his employers against possible legal entanglements with governmental or other control agencies. Someone has remarked in jest that the procedure was a sort of game in which most frequently a second-rate person was employed to "catch" a first-rate one.

But detection of fraud, prevention of adulteration and other aspects of "police" regulatory activities are no longer to be considered the foremost duty or the greatest contribution of the laboratory man. He is beginning to take a more worthy and worth while part in guiding the policies of production and distribution, notably in the food industries. In what diverse ways he can advance the interests of those concerned, whether they represent the consumer or the producer, has been indicated in the contributions of Professors Sherman and McCollum appearing in the November and December issues, respectively, of this journal. I propose to call attention to a mistaken impression which still tends to hamper progress in so far as the laboratory worker's contribution to it may be concerned. Many—all too many—"captains of industry" continue to cherish the idea that a chemist is in general a mediocre sort of person, usually a college graduate, who is expected to engage in the deadening performance of routine analyses which, for the most part, an untutored person of moderate intelligence can be taught to carry out after a brief apprenticeship. Technical skill is a large asset to the chemist and every large job calls for more or less routine performance in the course of its execution. It is a serious mistake, however, to identify chemistry in any of its branches solely with chemical analysis, any more than bookkeeping and business are to be regarded as equivalent.

Dr. Lafayette B. Mendel

The upshot of this is that our industries must learn to think of the competent chemist as one whose intimate knowledge of materials and their behavior under a variety of conditions is bound to contribute to the solution of industrial problems. This means something more than the application of cut-and-dried analytical rules to a commercial substance. It implies a first-hand familiarity with the properties of many products, a capacity to anticipate reactions, a resourcefulness in devising ways to test the value of what may promise to be novel, an almost intuitive insight into errors of process, an appreciation of the applications and limitations of his industry and the possibilities of its by-products. Research has become a word to conjure with in the world of commerce. All progress postulates change; and the outcome of scientific investigation is usually not to excuse error or accept the conventional but to improve the old and propose something new. Research is in many respects a gamble; so are other aspects of modern business. Let us remember this.

It has long seemed anomalous to me that in this country a good advertising department has so often been expected or allowed to replace or perhaps displace the laboratory in determining the policies of large enterprises, particularly in the field of food industries. This has frequently resulted in the practice of advertising firms themselves to engage the assistance of the laboratory worker, in order to secure first-hand information and expert guidance in the problem at hand. The industries thus acquire at second or third hand, and perhaps in fragmentary form, the very help which they obviously need. Isn't it about time that the industries which have a large and often literally enormous interest in products and their manipulation should be the first to gain fundamentally important scientific information about the materials and methods upon which their very existence depends?

One may safely prophesy that when such industries learn to depend less upon outside so-called "experts"—all too often merely pseudo-scientists—and begin to develop their own research facilities a new era will be inaugurated. Such developments are not likely to be successfully brought about, however, until the peculiar working ways of the investigator are better tolerated. The laboratory worker who blazes new trails requires time, patience, support and confidence. Research is diligent, prolonged effort. It is not always rewarded; neither is an expensive page in a monthly "best seller" magazine. If the laboratory work of the industries is to rise above mediocrity, its personnel must not be permitted to remain mediocre.

Protected Shipment—What the Phrase Means?

By C. V. HODGES
Advertising Manager National Association of Box Manufacturers

IN this day of business education, when every industry and every individual organization is being probed for weak spots and the betterment of these conditions is being studied, a new phrase is coming to the front in connection with shipping. This phrase, "Protected Shipment," on analysis shows an extremely vital bearing on any business in which the factor of shipping enters.

Particularly is this true of those industries manufacturing and marketing food products, inasmuch as the salability of these food products is determined for the most part by the condition in which the product arrives at its destination, to be placed for sale to the consumer. Marred, broken, or otherwise damaged goods, dented packages and torn labels detract to an enormous extent from the salability of such a product.

Unfortunately, a condition has prevailed in the past for a considerable time in which large businesses abandoned the needs of their products for protection against the hazards of shipping which have always been a menace to the appearance and salability of commodities.

Every manufacturer naturally devotes his time, attention, and energy and invests his money to turn out a product which will appeal to and satisfy the needs and desires of wholesalers and distributors as well as of the consuming public.

Conditions and considerations were allowed to enter into the selection and purchase of shipping containers which ultimately tended strongly to defeat the aim of the manufacturer in the production of his product.

Should Consider Ultimate Cost

These considerations were based, for the most part, on savings in first costs and which insidiously enough caused an utter disregard of the fact that only the ultimate cost should enter into the matter. Cases insufficiently strong for the duty required of them, containers not physically fit to endure the great stress of the long hazardous trip while in transit were used because the initial cost of them was less than for containers strong and sturdy enough to function as a shipping case should. This condition resulted in the stupendous damage claim item paid by the railroads last year which amounted to one hundred five million dollars. There is no one who does not appreciate that that figure alone represents a tremendous burden on industry and there is at the present time an increasing number of business men who are realizing that the damage claim item paid by the railroads represents but a small part of the actual loss suffered by business because of the same conditions which forced this loss on the railroads.

Damages are not always apparent until such a time that claims against the railroads cannot be made. Damages occasioned in warehouses, in reshipment, in loading and unloading trucks, it is safe to say, would easily double the figure of the damages paid by the carriers; and in addition to this there is the loss of good will, the loss of time that the receipt of damaged shipments occasions and the tremendous slowing up effect that damaged shipments have upon the sales efforts of the manufacturer.

Loss of Good Will

To do away with these unnecessary losses every manufacturer should bear in mind that back of everything he does in his business is the one big object, that of holding the confidence and good will of his trade and the consuming public. The increase of his good will and of his business depends upon the attitude of satisfaction of the trade toward the service he renders. When the use of an improper shipping case and faulty shipping methods results in a loss of good will as well as actual money, is it not then poor judgment to risk these things in order to effect slight savings in the cost of the shipping container?

So, the most natural result of this growing enlightenment is the adoption by industrial firms whose product must be placed in shipment of the phrase "Protected Shipment," which means that whatever is packed for shipment is placed in a container which has proven to be strong and sturdy enough to resist the hazards of transportation and deliver its contents in as salable a condition as when they left the factory.

It must deliver its contents safely—this is the prime requirement of a shipping case. It must fulfill this function in order to justify its position in any business. The culmination of all manufacturing and producing operations is distribution by shipment. In other words, when a product is packed for shipment the whole worth and value of that business is entrusted to the shipping containers being used. Good will, increased sales, dealer influence and all of these necessary trade adjuncts are waiting at the end of the journey to be swung one way or another by the appearance and quality of the commodities as evidenced when they are unpacked.

Must Show Regard for Product

No favorable consideration can be given to any business which persistently packs its product in such a way that the shipment is received at the end of the journey in damaged, marred and spoiled condition with greatly lessened sales value. On the contrary, when the method of packing their shipment indicates that the manufacturer is interested, not only in the appearance of the loaded shipping containers when they leave his plant, but also in the appearance and condition of the same shipping containers when they arrive at the end of a long trying trip, that manufacturer is a showing a wise and proper regard for his product.

All of the selling effort, good will, advertising and dealer prestige building that a manufacturer may do cannot thrive and develop as it normally should under conditions represented by the receipt of damaged shipments. Everyone in the buying side of the business world from the wholesaler or jobber to the ultimate consumer is repelled by marred, damaged and crushed merchandise. Even the manufacturer who packs his product improperly, himself resents receiving shipments which are damaged because of the same improper packing that he himself exercises with reference to his own product.

The manufacturing business which devotes the same careful attention to its shipping container problem that it devotes to its production and manufacturing operations wherein the quality and sales value of its product is determined, will be the one who achieves a maximum success in these days of close competition and hard-fought sales campaigns.

Research on Edible Gelatin

The Edible Gelatin Manufacturers of America, Inc., announces the establishment of an Industrial Fellowship in the Mellon Institute of Industrial Research of the University of Pittsburgh, for the purpose of ascertaining the real food value of edible gelatin in its manifold applications in the American dietary.

The founding of this fellowship is the outgrowth of the desire of the members of the association to uphold high standards in the manufacture of this food and to have available for their own use and for the trade data of scientific and technical nature respecting its advantageous use in the food industries.

In addition to experimental investigations, a correlation of all available facts regarding edible gelatin will be made, to be held at the disposal of all users and prospective users of the product. It is hoped that real service may be rendered by supplying scientific data and technical advice.

The present incumbent of the Industrial Fellowship is Dr. Thomas B. Downey, who will be glad to furnish any available information to those interested in the uses of edible gelatin.

What the Canning Industry Has Accomplished

Work of the National Canners Association Has Placed the Trade in the Forefront

THE River Marne saw a notable peace-time victory more than one hundred years before it was the scene of the two decisive battles of the Great War.

This peace triumph was gained by Nicholas Appert of Chalons-on-the-Marne, in his fight against food-destroying organisms. M. Appert had been for a number of years at work on the problem of food preservation and in 1810 his efforts culminated successfully and the canning industry was born.

Washington headquarters of National Canners' Association

The industrious Frenchman was the first to give to the world the art of preserving food by means of sterilization and by the use of hermetically sealed containers. His patient experiments enabled him to evolve a technique so simple and at the same time so safe that even inexperienced persons have been able to follow the directions laid down by him.

The work done since Nicholas Appert's time has been chiefly in the nature of improvements in mechanical methods of preparing the products, in filling and sealing the containers and in securing various improvements in processing.

Spreading to England and then to the United States, the canning industry grew and flourished to such an extent that what was first conceived as a war-time measure came to be one of the major activities of the industrial world.

At first the crudely constructed containers and the hand labor involved in the processes made the expense excessive and canned foods were looked upon as delicacies, condiments or confections.

Industry Began Here in 1853

In the United States not much was accomplished before 1853, the chief pack being sea food which could not be transported inland unless artificially preserved. Cities were for the most part small and abundant fruits and vegetables were grown in their immediate vicinity and delivered fresh by wagons. Little demand was felt for out-of-season delicacies. Living conditions were simple so that concentrated foods were not required.

When the Civil War period began the fact that canned foods were superior to those that had been dried, salted or pickled was fully demonstrated. The soldiers in detention camps carried this knowledge to various parts of the country.

The next step was to develop economical methods of manufacture and to break down popular prejudice.

So well has all of this been accomplished that today the United States is not only the largest producer of canned foods but the largest consumer as well.

Got Real Start in 1819

The American chapter of the story really begins in 1819 when Ezra Daggett and Thomas Kensett packed a few lobsters, salmon and oysters in New York. In the following year William Underwood and Charles Mitchell canned quinces, canberries, damsons and currants in Boston. In 1841 Baltimore fell into line with canned fish. Small canneries then began to spring up all over the country, the West and Alaska joining, in 1856 and 1878, respectively. From that time the industry grew as a regional activity, each section of the country putting up the products for which the section was famous.

The industry now has its special place, just as do the milling, packing or any other industries. The stage of being an adjunct to the kitchen is passed and the industry involves the growing of suitable crops; the planning for their harvesting so as to insure their good condition when they reach the market; the feeding of herds according to scientific knowledge; the maintenance of specially equipped fishing fleets; these are but a few of the "side lines" that are really major activities in themselves.

Then comes the evolving of special machinery so as to reduce the number of hand processes to a minimum.

Last, but by no means least there are the substantial financial operations that are necessary before a cannery of even modest size can be installed. Not only must there be a substantial capital at hand but the local bankers are alive to the fact that a successful cannery is a distinct economic asset to the community.

Organizing An Industry

So much for the beginnings!

Like other activities that have grown to major proportions the canning industry has achieved this largely through organization. To quote an officer of the National Canners' Association:

"Because of the tremendous growth of the industry there naturally have developed innumerable problems and obstacles to be overcome before the industry could run without stripping its gears and before open paths for its future expansion could be hacked

Chemists at work in Research Laboratories of National Canners' Association

through a wilderness of complex difficulties.

"Individual effort on the part of canners to solve these problems and smooth the way for future expansion of their business has been made and has accomplished a great deal. But the psychology of the situation early brought out the truth that no canner works unto himself alone; his interests are intertwined with those of his fellow canners.

"He cannot build a wall around his business, lock the door against all comers and succeed in seclusion. His business needs breathing space, and companionship, a mutual exchange of ideas—co-operation!

"And so there came about a voluntary get-together in the industry, a fusing of aims and ideas, working to a machine. The National Canners Association was not created; it sprang automatically into being by pressure of the law that two heads are better than one when searching for a common prize.

Examination of canned goods in laboratories of National Canners' Association

"The present association dates its inception from the year 1907, when earlier formed organizations voluntarily welded their aims and efforts into the new organization. And the basic cause of this inevitable get-together was a general desire on the part of American canners to see the United States Congress pass adequate national legislation for the protection of both producer and consumer of canned foods. Correct and rational sanitation requirements for the pack was the issue. The result was the passage of the National Food and Drugs Act.

"And building up its activities on that sturdy cornerstone, the association has now become a constructive mechanism, made, run, and kept in repair by the canners, the affiliated associations and the trade at large for the betterment of the industry and the protection of the public.

During a recent conversation at the headquarters of the association in Washington, Dr. Henry M. Loomis, one of the assistant secretaries, said:

"As Mr. Gorrell, the Secretary has told you, the canners had no national organization prior to 1907, all business having been carried on by means of State associations, each serving local territories. In addition to these there were two other organizations, the Atlantic States Packers' Association and the Western Packers Canned Goods Association, covering those sections of the country indicated by their names.

"At a meeting of state associations in Washington in 1906 a committee was appointed with Willard G. Rouse of Belair, Md., as chairman. This committee was asked to report on the advisability of forming a national association and the following year at Buffalo the forming of the National Canners Association was authorized. The first president was George D. Bailey of Rome, N. Y.; C. S. Clarrey of Streator, Ill., was vice president, and Frank E. Gorrell was appointed secretary, an office he has held continuously ever since that date."

The personnel is today as follows:

James Moore, president.

Frank E Gorrell, secretary and treasurer.

James A. Anderson, first vice-president.

Charles H. Bentley, second vice-president.

Frank M. Shook, Henry M. Loomis, Louis Dashiell, assistant secretaries.

Board of Directors

J. E. Barr, J. E. Barr Pickling and Preserving Company, St. Cloud, Minn.

Charles H. Bentley, California Packing Corporation, San Francisco, Cal.

W. I. Berg, Onalaska Pickle and Canning Company, Onalaska, Wis.

Sol Brown, Dunbar Molasses and Syrup Company, New Orleans, La.

William D. Campbell, Van Camp's, Indianapolis, Ind.

Elmer E. Chase, Richmond Chase Company, San Jose, Cal.

S. E. Comstock, S. E. Comstock & Company, Newark. N. R.

C. O. Dawson, Blair Canning Company, Blair, Neb.

E. B. Deming, Pacific-American Fisheries, South Bellingham, Wash.

George A. Eastwood, Armour & Company, Chicago, Ill.

W. E. Elwell, Burnham & Morrill Company, Portland, Me.

Merritt Greene, Jr., Marshall Canning Company, Marshalltown, Iowa.

G. E. Grier, Pasadena Canning Co., Pasadena, Cal.

L. R. Hardenbergh, Carnation Milk Products Company, Chicago, Ill.

H. L. Herrington, Utah Canning Company, Ogden, Utah.

Lucius F. Hires, Fogg & Hires Company, Salem, N. J.

Albert Horner, Hawaiian Canneries Company, Ltd., Honolulu, T. H.

Bismark Houssels, Van Camp Sea Food Company, Inc., Los Angeles, Cal.

J. W. Hutchinson, Randolph Canning Company, Randolph, Wis.

L. H. Jastremski, Pelican Lake Oyster & Packing Co., Houma, La.

Fred P. Kendall, Sanborn-Cutting Company, Portland, Ore.

Russell B. Kingman, Purity Cross, Inc., Orange, N. J.

W. V. P. Maas, Keokuk Canning Company, Keokuk, Iowa.

Harry McCartney, Sears & Nichols Canning Company, Chillicothe, Ohio.

E. G. McDouall, Libby, McNeill and Libby, Chicago, Ill.

B. F. Moomaw, John C. Moomaw Company, Cloverdale, Va.

James Moore, New York Canners, Inc., Rochester, N. Y.

Roy Nelson, Roy Nelson Canning Co., Crane, Mo.

Robert J. Peacock, R. J. Peacock Canning Company, Lubec, Maine.

Ralph Polk, The Polk Company, Miami, Fla.

W. R. Roach, W. R. Roach & Company, Grand Rapids, Mich.

J. J. Rogers, Fall Creek Canneries, Pendleton, Ind.

C. H. Sears, Sears & Nichols Canning Co., Chillicothe, Ohio.

Robert S. Shriver, The B. F. Shriver Company, Westminster, Md.

I. Stephany, Greenabaum Bros., Inc., Seaford, Del.

D. H. Stevenson, The Torsch-Summers Company, Baltimore, Md.

W. B. Stokely, Stokely Bros. & Company, Newport, Tenn.

Richard Stringham, Woods Cross Canning Company, Woods Cross, Utah.

John M. Swing, Swing Brothers, Ridgely, Md.

William Timson, Alaska Packers Association, San Francisco, Cal.

E. F. Trego, Hoopeston Canning Company, Hoopeston, Ill.

P. H. Troutman, Colorado Packing Corporation, Canon City, Colo.

Charles H. Tugwell, Niagara County Preserving Corporation, Wilson, N. Y.

B. W. Weller, J. Weller Company, Oak Harbor, Ohio.

D. E. Winebrenner, D. E. Winebrenner Company, Hanover, Pa.

Administration.

With a strong organization, functioning with an efficiency truly amazing, it goes without saying that the affairs of the National Canners Association are administered according to the most modern methods. Continuing his description, Dr. Loomis said in regard to this:

"The work of this association is not simply for the promotion of beter business relations in the industry, but is of a much wider scope. A great deal of this work is directly in the interests of the consuming public, as its chief purpose is to improve quality, eliminate waste, and reduce the cost of production and distribution of canned foods.

"For the purpose of improving the quality of raw products and eliminating waste, the association established a Raw Products Research Bureau in 1920 for cooperation with growers and various State and Federal agencies in the study of crop and production problems. The work of this bureau is under the direction of an agriculturist of national reputation, and its value has already been fully demonstrated.

James Moore, president National Canners' Association

"Further activities of the association along research lines, for the purpose of placing the industry on a sound scientific basis and for gaining the unqualified confidence of the consuming public, are embraced in the scientific work of the Research Laboratories in Washington and in the investigations of so-called 'ptomaine poisoning' and related questions, carried out through cooperation with Harvard, Stanford, California and Chicago Universities. The work of the Research Laboratories, in a general way, compromises the study of bacteriological, chemical, physical, and technological problems connected with the industry. This work is closely correlated with the physiological research work at the universities above referred to, and has accomplished a great deal in eliminating waste by reducing spoilage, through scientific studies of the process of sterilizing canned foods. The Research Laboratories have the benefit of consultation with a special advisory committee of scientists appointed by the National Research Council. The annual expense for maintaining these laboratories averages about $40,000.

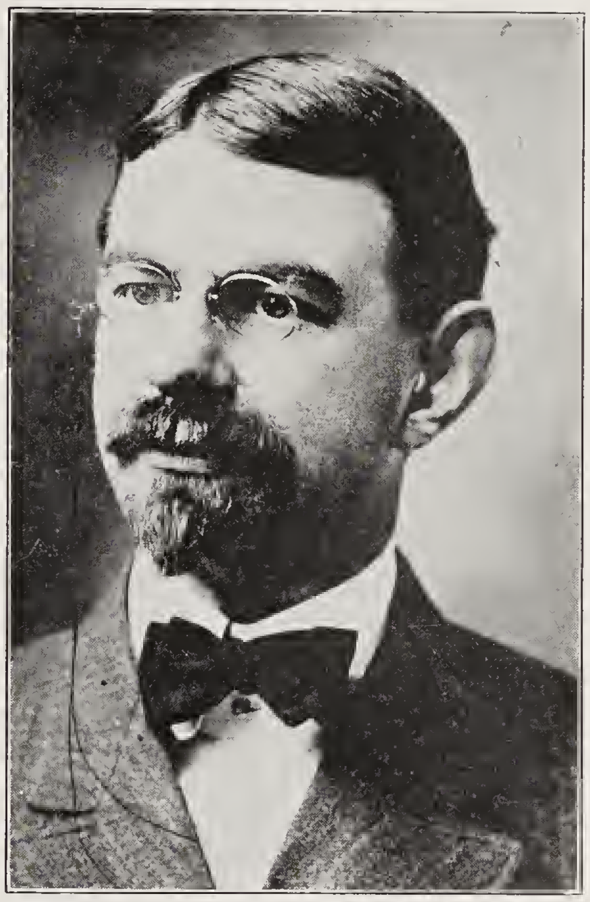
"The physiological research work which at first was somewhat limited in its applications, has broadened to such an extent as to include the large subject of food poisoning generally. Contributions to the knowledge of this subject have already been very considerable and will be of value to consumers of all kinds of foods, to the medical profession and health officers, as well as to manufacturers and distributors of food products. This association has expended over $150,000 in support of this work.

"This association was organized about the time of the passage of the Federal Food and Drugs Act which received its strong endorsement. The association has always advocated the packing of foods of good quality and the maintenance of sanitary canning conditions. In 1913 a committee on sanitation was appointed to draft rules governing the sanitary construction and operation of canneries. The plan for voluntary inspection of canneries which was started by the association in 1916 with one product, has now been broadened so that all members are required by the by-laws of the association to maintain sanitary canneries and pack only wholesome products. Following are portions of the by-laws referred to:

1. Qualifications: (a) Active Members: Any person firm, partnership, association or corporation engaged in the manufacture or preparation of foods packed in hermetically sealed containers and sterilized by the use of heat alone free from chemicals for preservative purposes, may become an active member of the association, if such person, firm, partnership, association or corporation shall be so conducting its business as a whole as to have no substantial interest inconsistent with the purposes and policies of the association, and if and so long as each person, firm, partnership, association or corporation shall maintain a sanitary canning plant, conduct same in a sanitary manner and use only wholesome products. Members of the association in good standing may, subject to rules and regulations adopted from time to time by the Board of Directors; print upon their labels and stationery the legend "member of National Canners Association" provided that the legend shall be so printed as in no way to give the consumer an impression of quality or grade."

4. Expulsion of Members: Any member who does not pay his dues or who ceases to be engaged in th business specified in paragraph 1, Article IV of the by-laws, or who acquires interests inconsistent with the purposes of the association, or who fails to maintain a sanitary canning plant, or who fails to conduct the same in a sanitary manner, or who fails to use early, wholesome raw products, or who fails or refuses to comply with any rules or regulations of the association, shall be dropped from membership. It shall be the duty of the secretary of the association on proper notice to report to the Board of Directors any delinquency or disqualification of any member and the Board of Directors may terminate the membership of such member by the affirmative vote of a majority of all the members of the board, provided, however, that the Board of Directors instead of terminating the membership of such member may have the option of suspending such member for such period as the board may determine.

"The association has revised its sanitary rules and regulations from time to time so that they now cover quite fully all the details of cannery practice. It is its purpose to maintain such inspection of the canneries of its members as is necessary to see that these regulations are complied with. Several states have passed laws regulating the sanitary conditions in canneries, based on the rules adopted by this association.


Frank E. Gorrell, secretary National Canners' Association

"The various sections of the association, such as the Pea Section, Corn Section, and Tomato Section have appointed committees on definitions and standards. These committees have cooperated with the Joint Committee on Definitions and Standards of the U. S. Department of Agriculture in the preparation of definitions and standards for the various grades and varieties of canned foods. Such standards as have so far been published are found in Bulletin No. 82-A.

"A great deal of work for the improvement of shipping containers has been carried on through a special committee and the Research Laboratories of this Association, in cooperation with the manufacturers of boxes and Forest Products Laboratory of the U. S. Department of Agriculture. Specifications were finally prepared by a joint committee, and these specifications were made the official specifications of the U. S. Food Administration during the war.

"Through our committees on foreign trade and on cooperation with the Department of Commerce, we are endeavoring to assist in every practical way in the collection and dissemination of information relating to foreign trade in canned foods.

"For many years the association has maintained a conference committee, for the purpose of meeting with a similar committee of the National Wholesale Grocers Association for the consideration and amicable adjustment of questions of mutual interest arising in connection with the distribution of canned foods. We have also endorsed the action of the wholesale grocers association and the brokers associations in the appointment of arbitration committees for the settlement of trade disputes involving canned foods in important distributing centers. Similar work is also undertaken by our adjustment committee.

"Through its traffic committee, the association has endeavored to secure a reduction in freight rates on canned foods, and cannery supplies. Present rates are an important factor in preventing further reductions in the cost of canned foods.

"After many years of work, the cost accounting committee of the association worked out uniform systems for classification of accounts, which were published in bulletin form. The bulletin covering such a system for one-line canneries is now out of print, but a bulletin covering a system for canneries operating on two or more lines is still available. This association has confined its work to a study of the proper classifications of accounts. It has never advised its members in reference to individual cost problems nor advanced standardization of costs."

War Work of the National Canners Association.

"While on the subject of administration," went on Dr. Loomis, "you will be interested to know how well our organization stood the test of war-time needs.

"The Government required canned foods. The canners had these products in abundance. The evolution of our war job made it possible for the canners to set aside a definite percentage of each year's pack for Federal use. We began with the Red Cross and other relief activities, proving by the successful results that such a plan was feasible and thereby convincing the erstwhile skeptical Army and Naval officials as to merits. From that time to the end of the war the Government commandeered the percentage agreed upon for each pack and a brilliant piece of organization was brought to a conclusion as brilliant."

Research Work.

"Of course our research department is one of our corner stones," was Dr. Loomis's next comment.

"It is in charge of Dr. W. D. Bigelow, a chemist of national repute and it furnishes the channel through which flows information for canner and layman alike.

"Dr. Bigelow gives the public valuable bulletins, he directs scientific studies in heat penetration, acidity of canned foods and heat resistance of bacterial spores."

"To the canner, worried by reports of botulism 'scares' he transmits such helpful messages as the following:

Do you know that the demand for canned foods has been greatly curtailed during the last three years by unfavorable publicity caused by the form of food posioning known as "botulism"?

Do you know that several outbreaks of botulism have actually been caused by commercially canned foods?

Do you know that the National Canners Association has arranged and financed a series of fundamental investigations regarding the causes and prevention of botulism?

Do you know that these investigations have been completed and have resulted in clear-cut conclusions that are now available to the canning industry?

In 1919 several spectacular outbreaks of botulism were caused by commercially canned ripe olives, and for the first time the canning industry was confronted with the fact that the growth of B. botulinus was a real instead of merely a potential danger.

The publicity that attended these outbreaks, and other outbreaks caused by canned foods, brought many inquiries from members of the National Canners Association. Among these inquiries were the following:

What is the original source of B. botulinus?

How widely is it distributed in nature?

How do foods become contaminated with it?

Under what conditions will it grow in foods?

If the organism is not destroyed in processing, in what canned foods may it grow and produce its toxin?

What methods of handling the raw product and preparing it for canning are best adapted to safeguarding against the infection of the foods?

Is any procedure possible other than adequate sterilization which will certainly safeguard against botulism?

What time and temperature of sterilization is necessary to kill the most heat-resistant spores of B. botulinus in various food products?

These questions have been answered by the investigations inaugurated through the instrumentality of the canning industry. The report of those investigationscontains specific recommendations for the conduct of a canning plant. These recommendations are enclosed herewith.

To the public, harrassed and frightened by tales of disease and death resulting from the use of canned foods, Dr. Bigelow says something like this:

HOW SCIENCE INSURES SAFETY OF CANNED FOODS

After the food is sterilized in the air-tight can it is absolutely protected from change and is therefore the safest food which comes to the table.

Modern canning factories not only put up fresh, clean food, but the can itself is first sterilized by washing with live steam before the food goes in.

After the fruits, vegetables or other products are put in the can, the can is sealed air tight, and it is then that the food is cooked. The sealed cans with fresh food inside them are put into retorts and cooked at a high heat and under steam pressure till the contents are sterilized.

The can is never opened after cooking until it is opened in the kitchen of the consumer, miles away and maybe months later, but it opens up almost as fresh and tender as the day it was taken from the field.

Canned Foods the Choicest of All Seasons

Canned fruits and vegetables are taken direct from the fields or orchards when they are in the right condition of maturity, and it is but a few hours until they are prepared, canned, and cooked.

Within three or four hours from the time the food is growing on the stalk or vine the greater part of it is cooked and safely stored in the warehouse. A small part may be allowed to wait longer than the above minimum, but seldom longer than the day's run, for each day's picking is put up before beginning a new.

The consumer gets fresh fruit and vegetables in the winter months instead of being limited to a diet of dried apples, salt pork and hominy. He is indebted to the canner for fresh, health-giving food 52 weeks in the year.

Even these quotations do not tell a tithe of the work accomplished by this fine laboratory. The director is in constant communication with great universities, serving their chemists and being in turn, kept in touch with the latest achievements of the colleges.

Cooperation

Perhaps one of the greatest if not the greatest test of individual or organized efficiency is found in the number and quality of outside contacts.

Of these the National Canners Association can point to a long and honorable list. The U. S. Department of Commerce, the National Bankers Association and Federal and state departments of health being only a few.

Among the most important of these cooperating agencies is the National Food Brokers Association. President Ford of this organization has some interesting comments to make on the subject.

"Since its organization, the National Food Brokers Association, has felt that, since practically all of its members are representatives of one or more canners, there should be close cooperation between the brokers' association as a body and the National Canners' Association, together with all other state and sectional Canners' Associations. There is a community of interest between brokers and canners which can be definitely made to elevate the entire business of manufacturing and distributing canned foods, only by a close understanding on the part of each asso-

(Concluded on page 40)

The Best Things From Current Food Magazines

A Digest of the Month's Periodicals for the Busy Reader

Advantages in Production of High Grade Butter

"THERE are two big reasons for the improvement of raw material and butter, first it means that higher price can be paid the producer for butter-fat," says A. W. Rudnick, in an article on cream improvement in a recent issue of the *Dairy Record*. The other is that when one is eating high grade butter one uses it more liberally. Eighty-nine point butter will not be spread on as thickly as ninety-three point butter."

Briefly discussing some of the types of cooling tanks and milking machines found most suitable by experiment and co-operation of the farmer with the state inspectors, Mr. Rudnick touches on the conditions of marketing butter. "You would surprised," he says, "to know how many operators are not sold on quality. The butter merchants in New York, Chicago and other large markets are to blame for this in most instances. About the only time that they call for official inspection is when there is a drop in the market. In the spring of the year the butter solicitors, like dandelions, are with us in large numbers. Some of these men know nothing of the quality of butter the creamery is turning out, and yet they promise extras and often a premium. Some houses do pay extras for butter that does not score 92. How they can afford to do it or why they do it does not enter into the discussion."

"If you are going to pay for cream according to grade," advises the author, "buy on the acidity test and flavor. The acidity test is very effective because the farmer can see for himself whether it is first or second grade."

Apple Juice to Be Subject to Publicity Campaign

THE projected campaign of publicity by the manufacturers of apple juice to increase the consumption of their product is discussed in an article by George Webster in *American Vinegar Industry and Fruit Journal* for November. "The fundamental conception," says the article, "is to establish a national organization which will control sectional subordinate bodies situated in the East, West, Middle West and South. There is planned an annual convention, and conected with it an exhibit of the very latest in equipment used in the making of apple juice. An extensive campaign will be inaugurated to bring before the consuming public the benefits and fine qualities of apple juice as a beverage."

The article points out that the advertising campaign will probably recommend apple juice in general as a product and that the vinegar manufacturer will have a prominent place in the new organization. Whether the apple juice campaign will be inaugurated first, followed by the vinegar campaign, or whether both cider and vinegar will be featured at the same time is a matter now receiving attention.

Reasons for New Slogan of Candy Manufacturers

REMEMBER, Everybody Likes Candy" was selected by the National Confectioners' Association as a slogan, says V. L. Price, in the December *Retailer's Journal*, because it is so simple that everybody can read it, children as well as grown-ups; it can be read quickly; it is happy and not too formal; it is not an imitation of other famous slogans; it is euphonious and sounds well when repeated; it is applicable to seasonable suggestions, holiday suggestions, social functions and to purchase for children, young ladies, wife, mother, family, business gifts, charitable remembrances and for domestic uses. In addition it is economical in the cost of printing in that it may be printed in one color or more if necessary without destroying its individuality and lends itself well to transparencies, cartoons, stories, etc.

The hand with the string on, which appears with the slogan is symbolic of the words "don't forget" or "remember" the hand being used because it gave the slogan individuality over mere words. There is also the suggestion of gifts and uses. The word "likes," says the article, is the fundamental reason why people buy candy. They do not buy it because it is pure or has food value, but they buy it because they like it. Of course, their having confidence in its purity and food value is assumed. The word "candy" includes all kinds of candy—everything that is classed as candy.

Facts About Rice Given by Food Economist

"THE varieties of rice most commonly adapted to the Atlantic coast are the Carolina Gold, Carolina White and Blue Rose," writes Arthur E. Albrecht, economist of the New York State Department of Farms and Markets in an article on the development of the American rice industry, appearing in the November *Journal of Geography*, Chicago. "The gold variety," says the article, "is noted for its deep orange husk, long kernel and good yield; the White Carolina rice has a long kernel and a white husk. The Honduras and several Japanese varieties are best adapted to Louisiana, Texas and Arkansas. The Japanese variety is most commonly grown in California. The Honduras type, originally imported from the Honduras, has a long kernel, and the Japanese type, a short thick grain. Among housekeepers the longer grain variety seems to be preferred. Recently a new variety of rice known as Caloro has been found to be well adapted to both new and old land in California. Experiments have shown that it has yielded from eight to thirty per cent of all the standard varieties of rice grown in California."

The article covers methods of cultivation, the milling process and a brief history of its introduction into this country. In a brief paragraph on the marketing of rice, Mr. Albrecht points out that in order to facilitate the contact between sellers and buyers on the New York market, a rice exchange has been organized and is managed under the direction of Walter J. Moses at 90 Wall Street, New York. The exchange maintains a large room where buyers may examine samples of rice and make arrangements with rice growers, millers and dealers concerning its sale.

"Among dietetians rice is recognized essentially as a carbohydrate," says Mr. Albrecht. "The white or polished rice contains more carbohydrates than the brown rice but less minerals, water, proteid and fat. When cooked in four quarts of water, a cup of rice more than triples in bulk, each grain remaining separate. One cup of rice cooked in a double boiler will absorb one quart of milk.

"It is a food that is easily digestible and can be used in many ways. It may be used for any meal. It can be served the Fleischman Company is proof positive of the valuation which we accord it. When one considers the inrumerable activities of such a company as ours and that each one is as carefully rganized and administered as was this national publicity campaign, it will readily be seen that the research library is important."

How Home Economics Work Helped Food Manufacturer

Merrell-Soule Company Early in 1922 Established a Special Department of Dietetics and Cookery

By F. C. SOULE

F. C. Soule

IT is with a great deal of interest that I have observed the onward march of the women in the profession of Home Economics—over a period of fifteen or twenty years.

I remember clearly, the introduction of "cooking" into the public schools and the storm of comment it created.

The conservative element felt that cooking should be taught by the mother in the home and that school hours should be devoted to reading and writing and 'rithmetic.

I am not greatly agitated over the hue and cry about the dissolution of the American home, when I see on every hand the huge educational sums being expended to preserve the American home—the public school, the private school, colleges, universities, Y. W. C. A., women's clubs, the United States Department of Agriculture—all are teaching the art of home making and the daily newspaper, the weekly magazine and the monthly publications all present material for the consideration and education of the home.

It was impossible for us, even as we believe it is going to be impossible for other manufacturers of food products, to ignore this march of women in the direction of scientific knowledge, as related to dietetics and cookery and in order to disseminate information based upon the newer knowledge of nutrition; to present facts relative to the composition, manufacture and use of our food products, we established a department of dietetics and cookery early in 1922, under the direction of Mrs. Mary Reed Hartson, who has had many years of experience in this application of the knowledge of ethical contact through a commercial affiliation, with the women of the home economics profession.

Our product, powdered milk, lends itself ideally to this work and Mrs. Hartson's co-operative work with public schools in their "milk campaigns" and school room lunches, as well as the co-operative assistance she has furnished workers in the field of Child Hygiene and the class room work with home economics teachers, has been of inestimable value to this company. A concrete illustration may be of interest:

In one of our large Eastern cities, our distributer has been endeavoring for several years to meet and talk with the home economics teachers in the public schools. Each effort on his part was met with rebuff—because he was a **salesman**.

When the representative of our department of dietetics and cookery called on the director of home economics the entire atmosphere was changed. Her position, all she represented of the ethics of her profession, were evidenced in her appearance—as well as her choice of verbiage and she was accepted as a **specialist** in her given subject.

As a result of the confidence in us, from the **educational** standpoint, which she inspired—that feeling of defensive antagonism to our advertising or selling representative was overcome—and our educational literature—our school room wall chart—and like material was sent each teacher at the request of the supervisor.

We have a charming "home" kitchen only a few doors from Mrs. Hartson's office, where all recipes and formulae are carefully tested and checked and within those walls the one-time household word "luck" in cookery is unknown.

We have thus, an opportunity to test our products **in the surroundings in which they are going to be used**, and that one factor subconsciously lends weight and authority to every statement going out over our signature.

I believe sincerely, that the message which Mrs. Hartson brought back from the Home Economics Association in Corvallis this summer of the ideals of the committee composed of home economics women in business, is excellent and I feel that through our department of dietetics and cookery, we, as one of the oldest food manufacturing firms in the country, are "disseminating home economics information through business connections."

Now I grant you that back of all this, there is the merchandising idea of creating a larger volume of sales—but we have found greater stability in the increased business that is stimulated through this co-operative link between the Merrell-Soule Company and the teaching profession—and I say unhesitatingly, that our department of dietetics and cookery is a large factor in helping our industry.

"Oils and Fats Economic Review"

The Bureau of Raw Materials for American Vegetable Oils and Fats Industries, Munsey Building, Washington, D. C., has published the first number of "The Oils and Fats Economic Review," a four-page bulletin, giving facts regarding the industry. It is explained that "so many requests have been received from those desiring to be kept informed as to the work of the bureau that the issue of this monthly bulletin becomes a necessity."

EDITORIAL

Differences of Opinion Among Food Officials on Uniformity in Legislation

LETTERS from a number of state food control officials, published in this issue, reveal differences of opinion as to the possibility of bringing about greater uniformity in food laws. Some take the extreme view, as does Capt. Rose of Florida, former president of the Association of American Dairy, Food and Drug Officials, that "a uniform food and drugs law is not, at the present time, practical," while a few believe that a greater measure of uniformity may be brought about if some workable plan is adopted.

The American Food Journal in this issue presents a plan which is an elaboration of a suggestion made at the Kansas City convention of the food control officials, by Dr. J. S. Abbott of Washington, D. C. In a letter to the editor, A. L. Sullivan, food and drug commissioner of Maryland, presents a similar plan, and C. Stanley Greenbaum, dairy, food and oil commissioner of Wyoming, endorses the suggestion made by Dr. Abbott at the Kansas City meeting.

In a nutshell the suggestion which Dr. Abbott presented was that groups of manufacturers of food products draw up briefs setting forth the situation as to legislation affecting their own particular products, and that this brief be presented to the food control officials, to be followed by conferences from which a uniform law might be evolved that would amply protect the consumer and at the same time remove some of the handicaps under which the manufacturer is now laboring due to the multiplicity of laws, many of which are conflicting, one with another and with the Federal laws and regulations.

Mr. Greenbaum of Wyoming says that his state stands ready to take action in accepting the concensus of opinion of a group of manufacturers of certain products "if this information is transmitted to it and proper provision is made that the public is protected at least in the same degree as it is now." Mr. Greenbaum expresses the hope that all of the states will take similar action. He concludes by saying, **"Let us, instead of discussing uniformity, try such a plan as has been suggested and actually put it into effect."**

In publishing the proposed model cider and vinegar law of the American Cider and Vinegar Manufacturers Association, which appeared in our December issue, The American Food Journal has taken a step which it is hoped will be followed by the manufacturers and by food control officials to bring about sane action is ameliorating the present legislative situation. At least one state, Virginia, promises to attempt to secure the adoption of the cider and vinegar bill. Mr. Breazeal of the Dairy and Food Division of that state, says:

"In so far as this division is concerned, we are ready to adopt it without a single change, and unless something better is suggested in the meantime, will make an effort to have it enacted into law at our next session of the legislature. This division is on record as favoring sane and uniform laws for all of our food products."

Most of the food control officials who are skeptical as to the possibility of obtaining uniformity in legislation admit the desirability of it, but suggest various reasons as to why they consider it difficult to repeal present laws in favor of those which might be considered as more reasonable.

Mr. Sullivan of Maryland believes that the method of attempting to obtain uniformity in the laws covering one product at a time will be much more successful than any effort to secure passage of a general uniform food law. The American Cider and Vinegar Manufacturers Association has came forward with a model bill, which has met with approval in some states, while in others the opposition to it is slight, if any. We suggest that other groups of food manufacturers handle their own problem in a similar way.

Earnestly believing that a solution of this problem can and will be found, The American Food Journal stands ready to be of whatever assistance it can render in bringing about a more wholesole situation.

The Food Manufacturer and the Teacher of Domestic Science

THE food manufacturer and the teacher of domestic science are among those who are building for the future by centering their activities round the child. True, the manufacturer may be doing this unconsciously, but he is nonetheless a power in the program of citizen-making. Without him there would be no pure food to be used in building healthy bodies, nor could the teacher of domestic science count on constructive results from her nutrition lessons.

It therefore behooves these two strong allies, the manufacturer and the teacher, to "get together" in every possible way. That they may do this mutual knowledge of each other's problems and accomplishments is imperative. To this end The American Food Journal offers its new department, "Food and Health Education," as one common meeting ground.

Planned primarily in the interests of the teacher, this department will ultimately reach instructors of domestic science in all parts of the country. Each one of these women is on the alert to become conversant with the best in local and national markets; with no hint either of partisanship or propaganda her very professional activities are an indirect advertisement of good food products; her pupils unwittingly carry to their homes further recommendations of these products; in short, the teacher of domestic science is a power with which the progressive manufacturer increasingly reckons.

Domestic science women are fast learning that they need the food manufacturer, just as manufacturers are coming increasingly to depend upon the services of these women in their own plants. It is for both to realize that fresh fields of common endeavor are being opened up. The domestic science class room is one of the strongest of platforms on which teacher and manufacturer may meet. Properly worked out the results of this combined effort will have important bearing on a future of physical, intellectual and economic efficiency.

Removal of Offices

The Editorial and Business offices of The American Food Journal have been moved to 342 Madison Avenue, New York.

Index for Vol. XVII Ready

The index for Vol. XVII of The American Food Journal, the 12 issues of 1922, is ready and will be sent upon request to any subscribers who wish to use it for binding their copies or otherwise.

BOOK REVIEWS

Laboratory Manual of Fruit and Vegetable Products. By W. V. Cruess, B.S., Associate Professor of Fruit Products, University of California College of Agriculture, and A. W. Christie, M.S., Assistant Professor of Fruit Products, University of California College of Agriculture. McGraw-Hill Book Company, Inc., New York and London.

That food preservation has been definitely related to the progress of civilization is well known but the authors of the present handbook aptly call attention to the fact that it has been one of the last of the arts to attract the attention of scientific men.

The preparation and preservation of fruit and vegetable products have become of great economic importance but it is only recently that the subject has been featured in the curricula of educational institutions. In many industries manufacturing and marketing have become of as great importance as production.

The authors have prepared a manual that shall be a reliable guide in laboratory courses in colleges of agriculture, schools of domestic science, etc. The manufacture, preservation and examination of fruit and vegetable products are fully discussed, "assignments" being planned to simulate as closely as possible present commercial practises.

Although intended for use in agricultural colleges the book contains a vast fund of information of value to growers and manufacturers of fruit and vegetable products, food inspectors, chemists, home demonstration agents, club leaders and teachers of agriculture and of domestic science in secondary schools.

Among the problems analyzed are: determining the grade of commercially canned fruits, experimental canning of fruit, grading commercially canned vegetables, experimental work with pectin and jelly making, the drying of fruits and vegetables and methods of analysis.

The book is profusely illustrated with practical working drawings, photographs of machinery, tools and laboratory practises.

Lectures on Dietetics. By Max Einhorn, M.D. Emeritus Professor of Medicine, New York Post Graduate Medical School and Hospital. W. B. Saunders Company, Philadelphia and London. $2.25 net.

"Diet plays so important a part in health and disease that every physician should be well informed on all points pertaining to it. It should really form the basis of every medical study. It is the A B C of medicine. * * * If we understand all the relations of diet a great deal can be accomplished by it alone in the treatment of disease without the aid of medicine."

The above paragraph with which Dr. Einhorn opens his book strikes the keynote of the entire work. The fact that the author thus publicly discusses the inter-relationship between diet and preventive medicine proves his broadmindedness, as his brilliant accomplishments in the field of medicine have already proved his right to be classed as an authority.

Several of the lectures from which the litle book was developed were given to students at the New York Post Graduate Hospital, while others formed part of the instruction offered to our soldiers before leaving for the front.

The care of digestion, the dietetic treatment of gout, diabetes, surgical cases, and diseases of the kidneys are all fully discussed as well as diets for obesity and emaciation.

The book is essentially for the physician or for the dietitian who is working in consultation with the medical adviser. The fact that the method of treatment is simple does not imply that the layman may safely follow the author's suggestions unadvised. On the other hand, the style is so clear and the subject of diet in disease is made so interesting that Dr. Einhorn is quite justified in the hope expressed in his preface: "That the book, like its predecessor, will contribute toward the spread of knowledge of dietetics in this country."

An Outline of the Pirquet System of Nutrition. By Dr. Clemens Pirquet, Professor of Pediatrics, University of Vienna. 16mo, 96 pp. $2.00 net. W. B. Saunders Company, Philadelphia and London.

Dr. Pirquet's little book is the outgrowth of repeated requests for a small edition in English of his "System of Nutrition" in four volumes, published in 1917.

There are eight sections in the present summary, dealing with body measurements and their relation to nutrition, the nutritional treatment of tuberculosis, proper feeding as preventive medicine, and presenting two tables showing the food values of foodstuffs according to the author's system, and a fine bibliography.

Students of nutrition will be interested in the special feature of Dr. Pirquet's work, namely his conclusion that the "sitting height" or height of the trunk stands in very close relationship to the cube root of the body weight. This conclusion is supported by data gathered during the course of work with more han 500,000 individuals.

That he might make a formula easy to remember the author has coined several words, the use and application of these being fully explained in the chapter which sets forth the mathematical principles on which Dr. Pirquet has founded his system of measurements and calculations.

Briefly summed up, the author "assumes as a starting point of the theory of nutrition not the amount of heat given off by the body but the amount of oxidizable intake in the form of food." Commenting on the fact that the amount of food taken into the body is related to a theoretical intestinal surface, Dr. Pirquet shows that this intestinal surface is again related to a two-thirds power of body weight, and it is from this point that he develops the mathematical conclusions regarding the theory that the output of body heat is not the real standard of measurement for nutritional needs.

After a clear explanation of the method used in determining food units, the metric system being used throughout, Dr. Pirquet proceeds to show how his theory may be applied to the feeding of children and to the feeding of tuberculosis patients.

The chapter on proper feeding as preventive medicine, short as it is, is a veritable mine of suggestive statements. Calling attention to the need for more extended knowledge of the principles underlying nutrition, Dr. Pirquet makes the gratifying statement that the American dietitian is a strong force in this necessary work of popular education. The prevention of stunted growth and muscular weakness is, of course, of primary importance and this chapter with the scientist's true insight shows how to apply the principles of right feeding to the needs of the group as well as to the individual.

Canning Age Food Packers Directories, In Two Parts. Main Directory Section, Comprising Names and Addresses of Plants Arranged Alphabetically by States. Classified Section, Comprising Alphabetically Arranged Lists of Packers, Classified According to Variety Packed. Canning Age, New York. Each Section, $3.00. The set, $5.00.

The detailed information contained in these two directories is furnished directly by those actually engaged in the canning industry and is therefore considered accurate and reliable.

The first section contains a directory of the food packers of the United States and Canada using tin containers. The volume also carries addresses of branch plants, names of general officers and of purchasing agents. The varieties packed are listed together with information concerning the average yearly pack in cases. The material is arranged alphabetically by states.

Volume II, comprising the second section of the directory gives similar information regarding food packers using glass containers, with the additional feature of a classified section comprising alphabetically arranged lists of packers classified according to variety packed.

FOOD AND HEALTH EDUCATION

Copyright, 1923, The American Food Journal

Practical
Ideas for
Teachers
of Nutrition
and Hygiene

A Department of The American Food Journal Devoted to the Interests of Class Room and Field

EDITED By WINIFRED STUART GIBBS

Valuable
Suggestions
for Domestic
Science
Instructors

Announcing a New Department for Teachers of Foods and Cookery, Nutrition and Hygiene

IT is a truism that a teacher must "know more than she teaches." Even during the days when "teaching school" was much simpler than it is today, when there were no "specialists" and when one teacher cared for the education of students from six to sixteen, this same teacher, if she were worthy of her calling, made herself responsible for far more than the discussion of a certain number of pages assigned as a "lesson." The richer her own background the more vivid were her illustrations, the more telling her points.

All this is equally true today, with an ever-widening application. The specialist who remains merely a specialist just misses "striking twelve."

Some one has said:

"Back of all the great professions there is a tradition, of men, of methods, of ethical standards. Partly it is that tradition which makes them greater than a mere aggregation of individuals. And partly also it is that tradition over which constructive evolution stumbles, in the face of which new ideas falter. * * * If ever we reach the point where new ideas are frowned upon * * * where we are static and not dynamic, then we might better never have begun at all."

The Service This Group Renders

PERHAPS no other group is rendering larger service along these lines than the teachers of household economics; these educators are carrying the banners of specialized training into the field of general education, giving of their expert knowledge, receiving in turn stimulation and inspiration.

SPECIAL ANNOUNCEMENT

Herbert H. Hoover announces that effective January 1, 1923, the Child Health Organization and the American Child Hygiene Association have been amalgamated under the name of The American Child Health Association, with offices at 370 Seventh Avenue, New York.

This amalgamation will make it possible for those interested in obtaining advice on health and nutrition problems to secure this advice from a central source.

The new organization will be prepared to assist with programs covering the needs of children from the pre-natal period to adolescence.

Ten minutes conversation with the teacher of domestic science reveals her as a combination Home Economist - Educator - Artist - Writer - Craftsman, not to mention other accomplishments.

It is because of this diversity of interest on the part of the domestic science woman, as well as the wealth of service rendered by her that The American Food Journal is opening a section to be devoted to the interests of education in food and health.

Aims of the New Section

FIRST of all we are going to try to give the teacher what she wants, not what we think she might like. To this end we are constantly in conference with the very persons who are best qualified to tell us what our teacher-readers require. Rather than a formal board of advisers our plan is to consult with everyone who is by way of understanding the teacher's problems, including, of course, the teacher herself. This means that every educator who is interested may become a co-editor of the department.

Assured of the "liveness" of the interests under discussion, our next care will be to see that the material presented is practical. If we cared to adopt a slogan it would be, *"Every suggestion tested by real teachers in real class rooms with real pupils."*

Naturally discussions growing out of these suggestions and descriptions of projects will be welcomed, but the fundamental principle governing the selection of material will be that of practical help rather than abstract theory.

Those Who Are Advising Us

It is too early to give a comprehensive list of those who are sitting in at our preliminary conferences. Suffice it to say that among them are organizations devoted to child health and welfare; heads of departments and teachers in secondary and junior high schools, specialists in state universities; members of faculties in technical schools and colleges; state supervisers in teacher-training schools; members of local, state and national home economics associations; health workers and those engaged in vocational education.

Copies of This Section of The American Food Journal will be sent to any address upon receipt of Ten Cents in Stamps

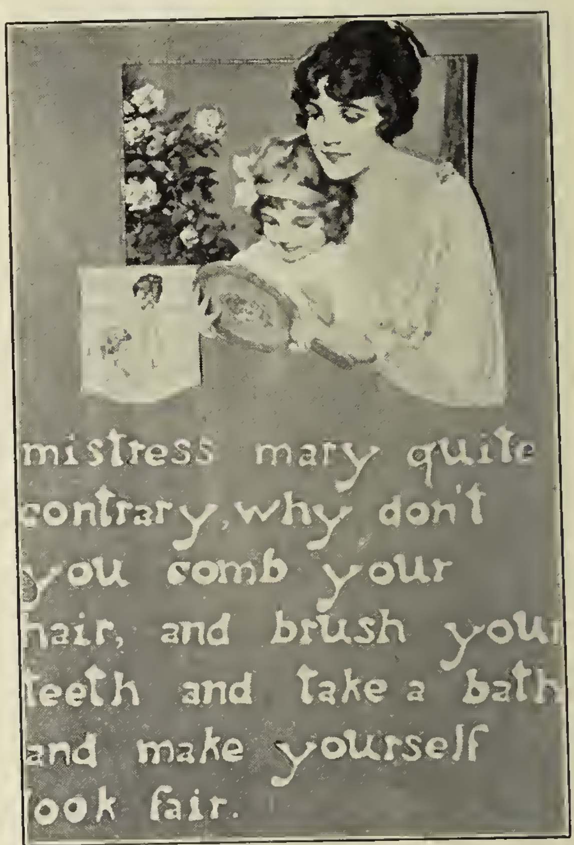
Nutrition Charts Made By Brooklyn School Children In Health Class

ADVENTURES OF EVERY GIRL IN MEAL LAND
Here are the flowers, said Sunny Smile
Please sit down Granny. We'll be waitresses, said Every Girl & Sunny Smile.

See Article On Following Pages On "Chart Making In Class Room Groups" by Marguerite Cain

little tommy tucker cries about his supper—a—bowel movement every day—and—he'll like his bread and butter.

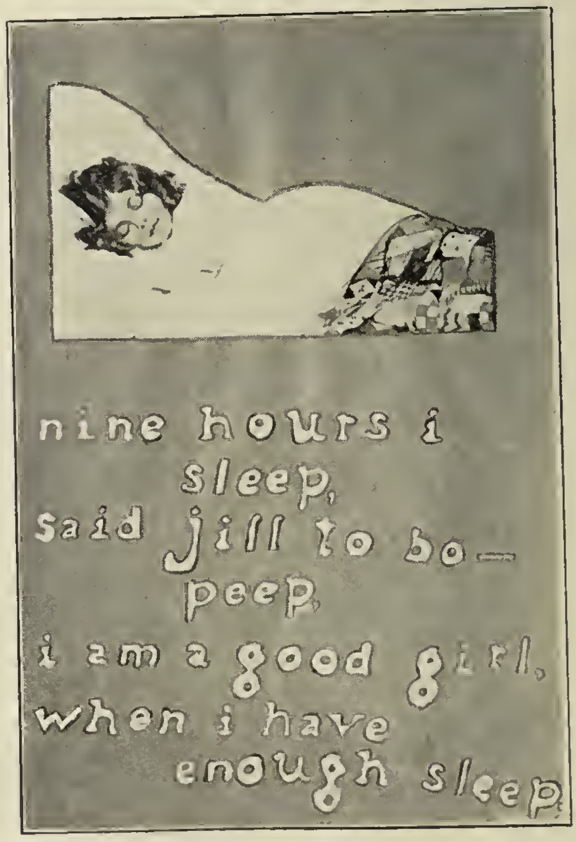
little miss muffet sat on a tuffet, smelling the good fresh air. she danced away home. her troubles were gone and so she was happy and fair.



mistress mary quite contrary, why don't you comb your hair, and brush your teeth and take a bath and make yourself look fair.

ole king cole was a merry ole soul, a merry ole soul was he. he drank four glasses of water a day & he was happy as a king should be.

curlylocks, curly locks, it soon will be nine. go open your window and into bed climb.



nine hours i sleep, said jill to bo-peep, i am a good girl, when i have enough sleep.

Granny Orderly hurried to set the table
Here are the flowers" said Sunny Smile "they'll make the table look grand."
down Granny. We'll be waitresses" said Every Girl & Sunny Smile
THE CHEEKS WITH A FAIRY SPELL

Chart Making in Class Room Groups

A Teacher's Methods of Developing Interest Among Her Children in Food Studies

By MARGUERITE CAIN

Teacher of Home Economics, Public School No. 109, Brooklyn

THERE are charts and charts! Some teachers make them to conform to the present tendency in education, others to present an idea. In the first instance the charts represent a vast amount of wasted energy; in the second they exhibit an equal amount of applied energy. For a child to put a concrete idea into a few words, and transfer it to cardboard in some forceful way, requires time and thought. During the process he absorbs the original concept and develops far-reaching theories of his own. For this reason the children should make the class-room charts.

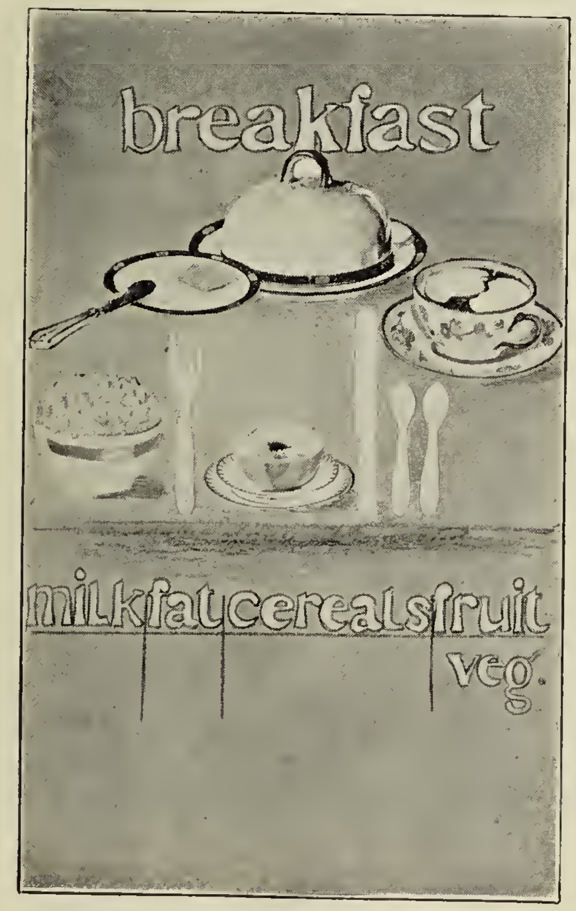
Without question the children will appreciate their work. The problem is to get charts which are neat, convincing and sufficiently artistic to be an addition to the room. Every school has a few children with real ability. One girl in a hundred can write the words, select the pictures, plan the spacing and do the printing, all with very little help. Eight or ten more can do part of the work. The other ninety are too modest, or too little interested, to make an individual attempt. These are the ones to profit from supervised or group chart making.

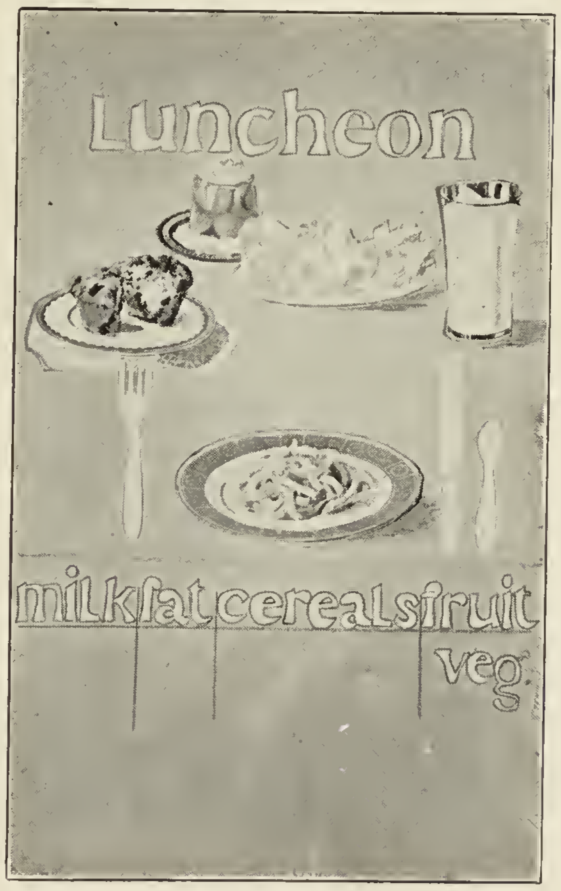
Whoever introduces the subject matter, let the children do the work. First of all, let them write the words. As an example take the Health Rules.

1. Nine hours of sleep every night.
2. Fresh air night and day.
3. Plenty of outdoor exercise.
4. Clean bodies, hair and teeth.
5. Water, at least four glasses a day.
6. A bowel movement every day at a regular time.

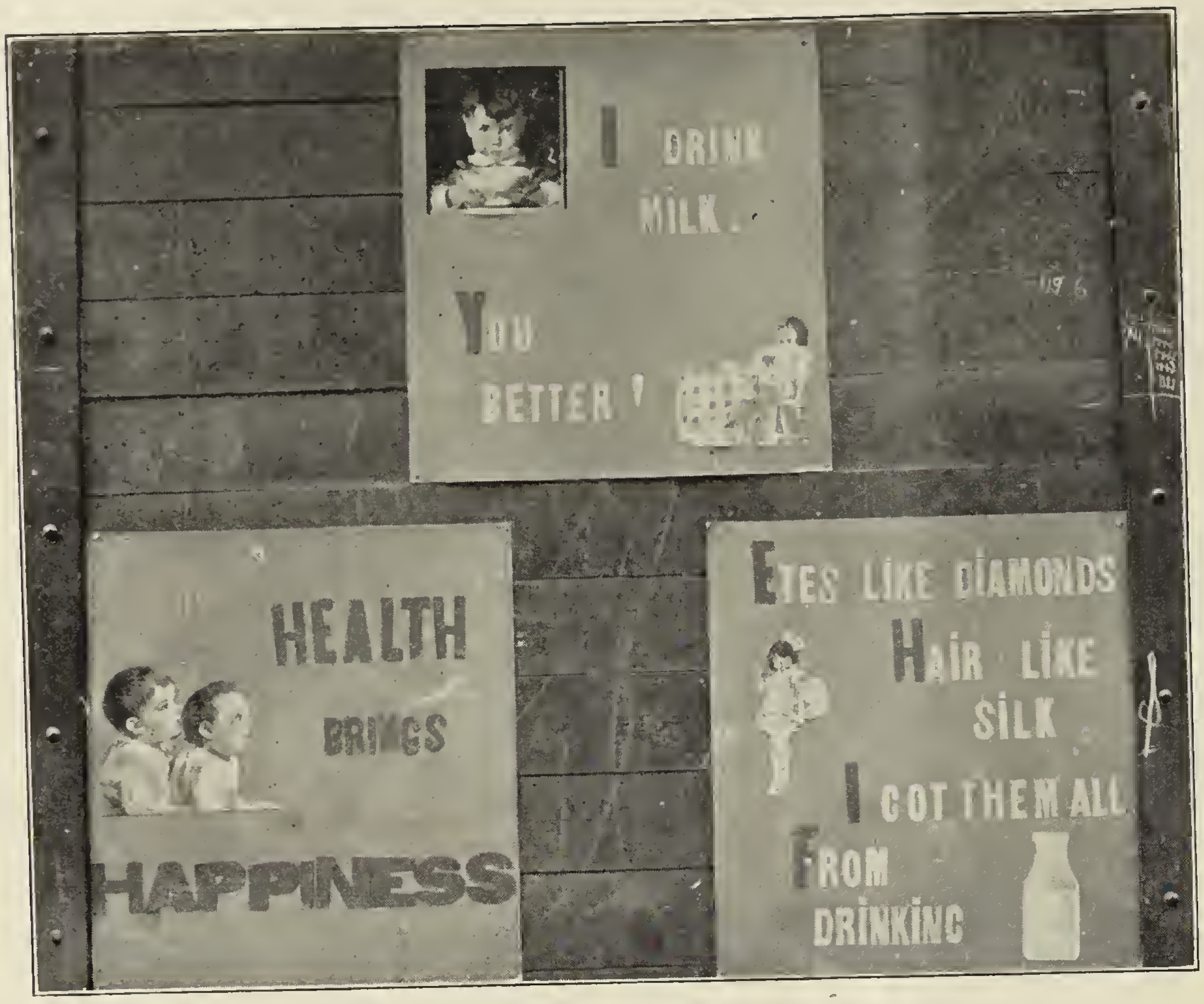
Give Definite Examples

First give general directions, and then definite examples. If you aim for verses quote a verse or, what is even better, make one. Mother Goose rhymes makes a good foundation as





At top of page is illustration of dining table set by girls of a Brooklyn school; below are charts made by children.



Poster on board at Brooklyn school exhibit

they are well known and the jingles are easy to copy. Make each girl responsible for one rule. She will probably try every rule before she gets through,but may need the spur of responsibility to make a start. Before they are through you will have every kind of meter, rhyme and prose, but eventually they will produce the desired material. They will exchange rules, ideas and whole verses to such an extent that the result is truly a class affair.

To be successful a chart must attract and hold the eye. Bright colors or harmonious color combinations will secure attention; well spaced lettering, large enough to be read at a distance, will retain it. The endless variety of interesting pictures found in the current magazines may be depended upon to add a note of color. In all cases they should illustrate the text. When an appropriate picture is not to be found, parts of two pictures may be used to good advantage. If care is taken in the choice of size and color, the combination will be hard to detect. For small charts, bright colored mounts may be used, but for larger ones neutral tones are preferable.

Lettering Sometimes Difficult

The greatest difficulty seems to be with the lettering. Hand printed letters take time and skill. Patterns for letters may be found almost anywhere —on magazine covers, in newspapers, in advertisements. In one style, however, you may find only ten of the necessary twenty-six letters. If you look long enough you may find them all, and to match, but if you tire of waiting, sit down with a ruler, T square and a pencil, and make those that are missing. It is much easier than you think.

Having the letter patterns, there are two ways of transferring them to the mounts. If the letters are to be painted, make a copy of the verse on rice paper. To do this, arrange the pictures on the mount and decide on the space for the words. Cut rice paper to fit this printing-space. On it plan and measure the space between lines, and draw the lines for the printing. Lay the rice paper over the alphabet and trace letter by letter, to form the verse as you want it to appear on the mount. Transfer the words to the mount with carbon paper and paint over the letters. Use any kind of paint. White bath-tub enamel dries more slowly than water colors, but it is easily applied and stands out with a glossy finish. With care, all of this work may be done by children.

Directions for the Work

Cut-out letters give the best results with the least work. Choose the all-in-one-piece variety of letter, wide enough to be easily handled.

Cut the patterns carefully from stiff paper.

To make the letters, lay the pattern on drawing paper, or other heavy paper, and draw around it with a sharp pencil.

Cut out the letters.

Arrange the pictures on the mount. Pick out the letters, spell out the words and arrange in the printing-space.

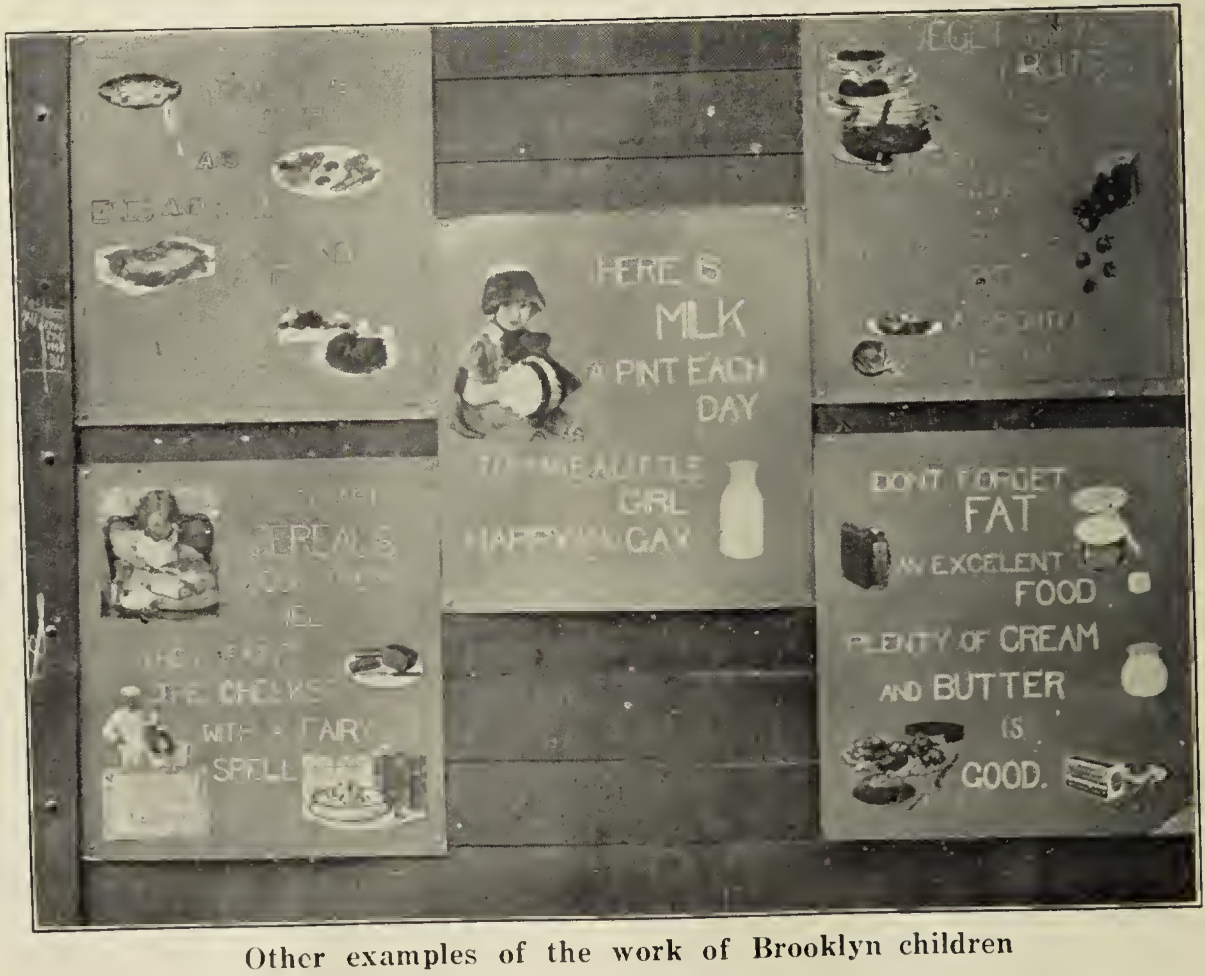
The letters may be moved closer together, spread apart, raised or lowered, until the general effect is right.

Then the spacing may be fixed with a ruler and the letters pasted in place.

Children can do all of this work with little or no supervision. When they become interested you will find them most critical of the wording and arrangement, and their judgment is good.

In this group system any number of girls may work on one chart, and have a feeling of personal ownership. Among themselves they say, "We made it," but showing it to friends, each girl will probably say, "This is the chart I made."

If one has an original idea, the whole class will welcome it, hasten to improve upon it, if possible, and wholeheartedly co-operate in developing it. It goes on one chart as a class idea, not on twenty-five individual, original posters.



Other examples of the work of Brooklyn children

Teaching the Rules of Health

Various Ways in Which the Interest of Pupils in This Subject May Be Maintained

By RUTH STRANG
New York City Schools

"OLD STUFF!" That's the way some of the 7A girls feel about the Health Rules when they come to cooking class for the first time. For they have had from the first grade, in many schools, a fifteen-minute hygiene period in which "health talks" were given. Accordingly, one problem which comes to the home economics teacher with each new term, is the problem of making the health habits more vivid and dynamic than they have ever been made before.

One suggested method of doing this follows: First the teacher should secure the best picture possible of a healthy girl of approximately 7th grade age. The commercial companies have a number of such pictures, and a friendly grocer will usually pass them on to the home economics teacher. Car advertising companies will often cooperate by giving car-cards and large posters such as those put on elevated stations. Sometimes the posters may be obtained by applying directly to the company whose product is advertised. It is usually quite simple to cut out the part desired, or paste paper over the advertising material. The teacher should also have on hand some old magazines from which clippings may be cut. The class is introduced to the girl in the picture.

"How many would like to look like Jenny?"

One by one the children come up and stand beside the picture.

"What can you do to look more like the girl in the picture?" the teacher asks the child.

"Can the class give any more suggestions?" the teacher asks, after the child has given her own opinions.

The Teacher's Suggestions

"If Mary ate spinach or other green vegetables every day, and played for an hour out in the sun every day after school, I think her cheeks would become as rosy as Jennie's." The teacher might add any specific suggestions of this kind, that were not brought out by the children.

If the child were of the thin, overactive, muscular, nervous type, the teacher should besure that such suggestions as the following were given:

"If Grace drank four cups of milk slowly every day, she would begin to gain, I think. And when the fresh air fairy flew in through her window at eight o'clock at night, she should find her fast asleep. And after every meal, Grace should curl up and rest, just as Kitty does after she drinks her milk."

Ten Little Health Girls

By Bertha Palliser, New York City Schools

1. Ten little health girls all went
out to dine;
One ate too much fried food—
then there were nine.
2. Nine litle health girls sat up
very late;
One had not enough sleep, then
there were eight.
3. Eight little health girls planned
to walk to Devon;
One got her feet soaked, then
there were seven.
4. Seven little health girls, one was
full of tricks;
Drank tea and coffee every day,
then there were six.
5. Six little health girls, all should
be alive,
But one refused to drink her
milk—now there are five.
6. Five little health girls went into
a store;
One spent too much for candy—
now there are four.
7. Four little health girls, so plump
and well should be,
One refused to drink her milk,
and now there are three.
8. Three little health girls, bad
habits had but few,
Till one didn't keep her body
clean—now there are but two.
9. Two little healh girls could have
lots of fun,
But lazy one won't exercise, so
now there is one.
10. One little health girl, living all
alone,
Remember all her health rules
and troubles she has none.
11. One litle health girl after such
a worth-while strife,
Will live many, many years a
happy useful life.

If the child were of the type that does not appear under weight, but is listless, often round shouldered, with flabby muscles and poor posture, "exercise out of doors, milk to drink, vegetable and fruit every day, and rest" should be suggested.

Sometimes the teacher finds a fat little girl, good natured and lazy, but otherwise perfectly normal. The other children, no doubt would suggest that she play more actively and eat less candy. The teacher might ask such a child to bring in a list of the food eaten during the week, so that she could roughly estimate the calories, and help her regulate the amount.

As these suggestions are being made, one child acting as secretary writes them down on a slip of paper and gives each child the rules which she, or other members of the class, or the teacher has suggested. In the remaining time, or the following lesson, or during the art period, each child should make a small poster printing the suggestions on it, and illustrating it by drawings or clippings cut from magazines. The children might be shown some old embroidered motto or sampler, and encouraged to make their pictures well enough so they could use it to hang up in their room, as people used to hang up the embroidered mottoes.

Must Keep Up Interest

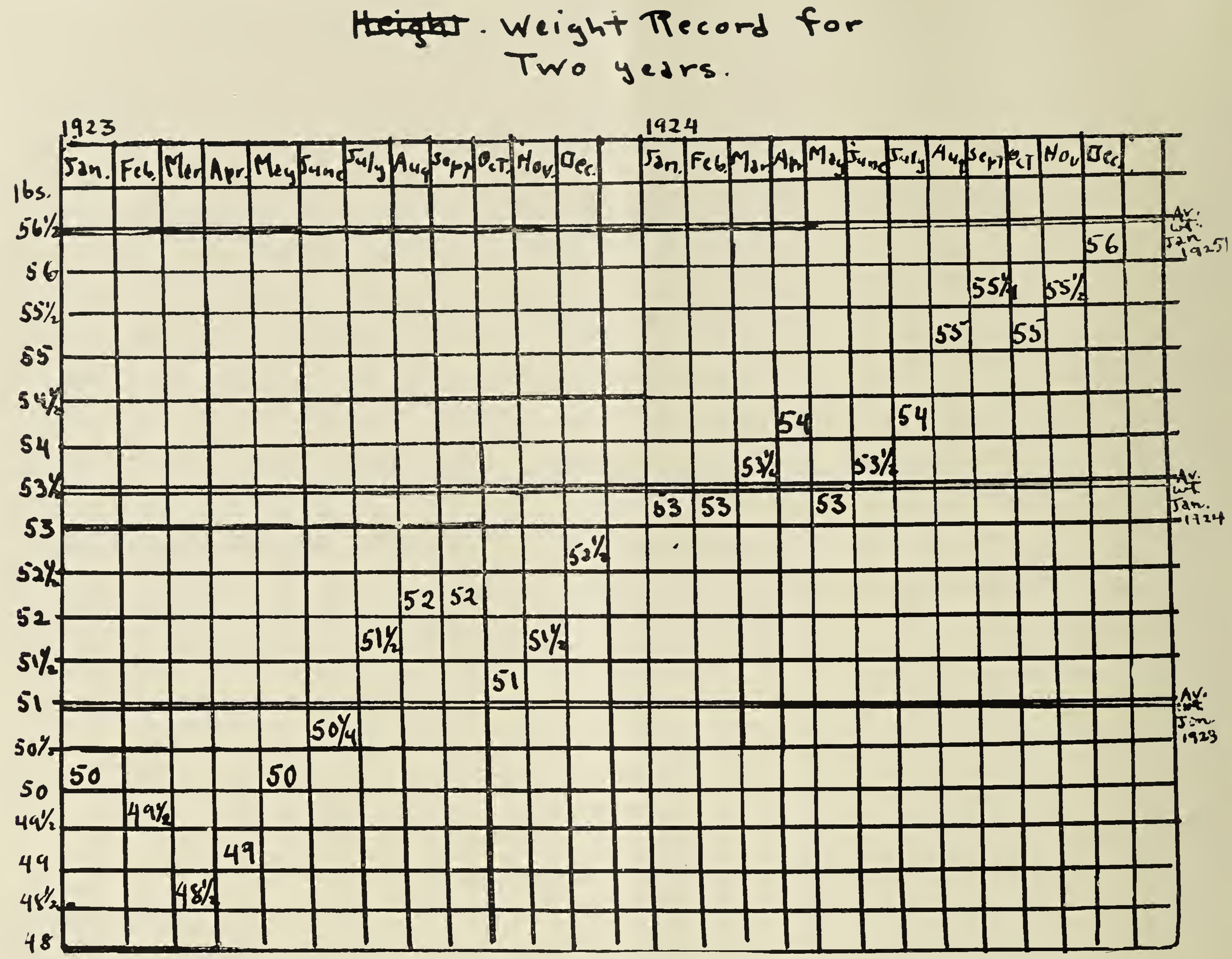
This interest in her own health, of course, should not be allowed to die out after the first lesson. It may be used to motivate the milk and cereal, fruit and vegetable lessons which follow. It introduces such problems as; "Why should Katie and Mary drink milk?" "Katie doesn't like milk to drink, what can we make of milk that she will like?" "Dora ought to eat spinach often, how shall we cook it?" etc.

One of the easiest ways to secure continued interest is through monthly weighings. The home economics teacher is fortunate in usually having each child for two years. A card such as the one shown for each child for the two years might be prepared by the child, and the weight recorded each month.

Drawing on Separate Page

Red lines at the proper levels, representing the normal weight of child at beginning of first year, end of first year and end of second year may be drawn.

The height of the child and her age, of course, is necessary in order to find the normal weight. The height-weight cards which may be obtained from the Child Health Organization are very convenient. To the normal weight for the child at the beginning, should be added the number of pounds of expected increase per year to obtain the line for end of the first year. Sherman's "Chemistry of Food and Nutrition",



A simple chart prepared by Miss Strang for her pupils to keep a progressive record of their health record as shown by their weights

page 372, gives a table of expected increase of weight for girls and boys.

On the card suggested, each space represents one-half pound. The first weight might be put in the January column four lines up to allow for any loss. Each succeeding month the weight is recorded on the correct line. Thus at a glance the child can see her approximate progress.

In some fortunate schools, the school nurse or doctor does this monthly weighing; but in many schools, the responsibility for teaching health falls upon the home economics teacher, and she is stepping bravely into the breach, and doing her bit.

Of course, she must have a scales in her room if she is to do this weighing. Raising money to purchase a scales makes an excellent project for 8B girls. "But that is another story."

In general, the teaching of the health rules must be such as "to catch the attention, hold attention," produce a favorable "feeling tone" in connection with the subject, and, last but most important, lead to desirable motor responses, the continued repetition of which will result in permanent health habits.

Suggestions to Teachers Regarding Sources of Material

REALIZING that the average teacher is working under high pressure and that she can not always afford the time required to look out sources of illustrative material, "Food and Health Education" plans to keep its readers in touch with just this information.

Names and addresses of educational organizations furnishing material of value to teachers will be listed and there will be parallel lists giving brief descriptions of educational matter put out by food manufacturers. THESE LISTS WILL BE PUBLISHED WITH A KEY NUMBER and our readers have only to send their request and we will have the material forwarded to them.

Will our readers and co-editors help us to build these lists, sending us from time to time names of either organizations or manufacturers that may not come our way. We hope to develop this information service in such a manner as to furnish a comprehensive directory of material.

Organizations Furnishing Material

American Child Health Association, 370 Seventh Avenue, New York City.

School programs, charts, bulletins, original material, addresses of experts, reports of projects, nutrition study reports.

New York Association for Improving the Condition of the Poor, 105 East Twenty-second Street, New York City:

Food charts, food primer, "Food for the Family" (a pamphlet, invaluable to teachers), reports of nutrition studies.

Office of Home Economics, U. S. Department of Agriculture, Washington, D. C.:

Meal charts, bulletins, reports of laboratory studies, advice on school projects.

Dairy Division, U. S. Department of Agriculture, Washington, D. C.:

Reports and advice on milk utilization projects, lecturers.

Bureau of Plant Industry, U. S. Depart of Agriculture, Washington, D. C.:

Advice and reports on "dietetic gardens," bulletins, exhibits.

School of Household Arts, Teachers College, Columbia University, New York City:

Extension bulletins on food and nutrition.

Extension Departments, State Agricultural Colleges, Every State:

Bulletins, advice on school projects.

The above is merely the first instalment of the list. New names will be added from time to time and short descriptive articles will be published occasionally, calling attention to newly received material. The first of these is given below.

New Edition of Pamphlet by Lucy Gillett

"Food for the Family," a 30-page pamphlet (new and enlarged edition) by Lucy Gillett, Superintendent of the Nutrition Bureau, New York Association for Improving the Condition of the Poor gives diets for the school children as well as for the toddler age or pre-school period. There are chapters on planning and cooking meals for the whole family and much other information.

The dependability of the material is vouched for by Miss Gillett's name and the teacher may adapt the material contained therein to her own needs, with the absolute assurance that she has data soundly scientific and at the same time readable and suited to any number of class room projects and problems.

Some Suggestions for Posters

By Bertha Palliser, New York City Schools

HEALTH SUGGESTIONS

A bath every day will keep the doctor away.

Sleep long hours with the windows open.

Exercise every day in the open air.

Drink at least four glasses of water every day.

Brush the teeth every morning and evening.

Drink milk slowly.

Drink plenty of milk every day.

Do you drink one quart of milk every day?

Milk is the best and most important food for children.

Milk is the best and cheapest food

Meal time should be a happy time

Eat slowly.

Do not bolt your food.

Chew your food well.

Wash hands before every meal.

Keep fit.

Health and happiness.

Fresh air night and day.

Rest after eating.

Dirty streets make people sick.

Would you like to be strong like Colonel Roosevelt?

Stand erect.

Sit erect.

Eat at the same hours each day.

Do not eat between meals.

Eat some leafy vegetable every day.

For good health plenty of sunshine, air and, exercise.

It costs little to keep well.

It costs much to be sick.

Proper eating is one of the chief factors of health.

Chase the flies—they bring disease.

What shall I eat for lunch?

Keep milk clean and cold.

Breath with your mouth closed.

Clean up and keep clean.

Insects are disease carriers.

Health brings wealth and happiness.

Athletes have good food habits.

Clean food for good health.

The House that Health Built

A Suggestion for Classroom Work in Nutrition

SIX children, each carrying a chart.

1. Chart with a picture of a well nourished girl.
2. Chart with a picture of a pint of milk.
3. Chart with a picture of cereals.
4. Chart with a picture of vegetables.
5. Chart with a picture of eggs, fish and meat.
6. Chart with a picture of fruit.

The construction follows the style of "The House that Jack Built." Each girl repeats her lines after the girl following her, has said her part, thus—after No. 2 finished, No. 1 repeats using the words writen about the words bracketed. After 3, both No. 2 and No. 1 again repeat (using the changed words at the beginning); this continues until all have repeated at the conclusion of No. 6's part. Then all recite together at the close of which the food charts are extended which conceal the girls. The last message thus is carried by the charts themselves.

No. 1

To make
(This is) the girl so happy and gay
Who lives in the house that health built.

No. 2

To eat with
(This is) the milk—a pint a day
That contains a little fairy fay.

No. 3

Besides the
(These are) the cereals, full of food
To make this girl grow well and good.

No. 4

With
(These are) the vegetables, especially the green
That contain a magic called vitamine.

No. 5

As well as
(These are) the eggs, the fish and the meat
A little of which each day she will eat.

No. 6

As well as
(These are) the fruits, she loves every kind
If served thrice a day, she wouldn't mind.

ALL

If you wish to be healthy
And happy and free,
Just remember my word
And be sure to eat me.

Topics for Discussion Proposed by Teachers

Editor's Note—In response to our request the following topics have been suggested.

"I should like to propose a discussion on the newest phase of home economics teaching, that is the so-called 'Job Sheet.' I have worked with a group of teachers and we have found out some interesting facts. I expect we could work up quite a bit of discussion on the subject from the various parts of the country.

"Another subject very dear to my heart is that of developing standards in the pupils' minds."

SARAH E. BOWER,
New York City.

"In answer to your question regarding topics for discussion I suggest the following, which I think would be of interest to domestic science teachers:

Details of routine—such as passing supplies, cooking suits, note books, etc.

How to make cleaning lessons attractive.

Class or individual problems suggested and worked out by the pupils.

Assembly programs.

Informal dramatization.

Stories for illustrating different lessons.

Home economics in grades lower than 7A.

Additional problems in prevocation schools or housekeeping apartments.

"It seems to me that the contributions should be specific rather than general in character, for although the plan probably could not be applied just as it is to any other school, it is easier for a great many people to make applications to their own situation from a detailed than from a generalized description."

RUTH STRANG.

Will not our readers respond to these suggestions and send us comments on the topics suggested together with other suggestions of their own.

A Day In a Girl's Life or the Open Door to Health

By A TEACHER

This is a teacher's suggestion to a playlet to emphasize to school children the various important points to be stressed in their education as to proper nutrition and hygiene. It has been employed successfully in New York and Brooklyn schools.—EDITOR.

USE an open door—copied from the Child Health Organization pamphlet. Children to come out of the door and give the information about the points on Good Health, each to be supplemented by the teachers—as she sees the need of more explanation for the parents.

I. Child comes out ready for bed carrying candle, says "Good Night. To bed I go; I must sleep nine hours every night, ten hours they say is even better. Every extra hour of sleep I get will help to make me a strong and healthy girl or boy. I must open the windows at night, too, as fresh air while I sleep does wonderful things for my body." (Throws a good-night kiss.) Class sings "She sleeps, my lady sleeps." Girl changes her dress.

II. Same child, after night sleep. "Good morning. It is just 7.30. I must learn to rise every morning at the same time (closes windows). I will shut out Jack Frost for a time. I allowed him and the fresh air in all the time I slept. In the morning I have many things to do."

III. Comes in, rubbing face with towel.

"I must wash carefully every day—especially my neck and ears."

IV. Comes in brushing hair.

"I can keep my hair soft and in good healthy condition by brushing it every day and washing it twice a month."

V. Comes in with tooth brush.

"Clean teeth are beautiful and a great aid to good health."

VI. Comes in cleaning nails.

"Clean nails are always necessary as the little spaces under the nails easily gather dirt and disease germs might find their ways to me in that way. (Looks at clean nails.) They look nice, too."

VII. Dressed ready for school and drinking a glass of water.

"I drink water to wash the inside of the body as the inside needs washing as well as the outside. I must drink four glasses every day then."

VIII. "I wear cotton dresses as they can be washed often. At school I have learned that clean clothes are a great aid to good health. I press my ribbons, too, as that keeps them looking well."

IX. Comes back with tray with breakfast on. Shows her food.

"This is what I eat on the mornings when we have very little time." (Carries tray on which is fresh fruit, dry cereal, hard roll, milk.)

Sets this tray down and gets another.

"This is what I eat when mother has more time." Stewed prunes, cooked cereal, toast, cocoa.

X. Back from school.

"My mother always tries to have my lunch ready when I come from school, because when I hurry it makes me sick.

"(a) I must wash my hands before I eat my lunch."

"(b) I must sit down while I eat and eat something hot for my lunch.

XI. Some of the children at school have colds. I think they sit in a draught or get their feet wet, so today we learned this:

MARY AND HER COLD

Mary caught a little cold
  Which settled in her head;
But she was very careful
  And did not let it spread.
She sneezed into her handkerchief,
  And coughed into it, too.
She breathed fresh air into her lungs
  Oh, she knew just what to do!
So Mary stopped the little cold
  Which started in her head
And no one caught it from her
  And had to go to bed.

Everyone who has a cold must be careful not to give it to others.

XII. Ready for afternoon, carrying skates.

"Today after school we go skating. It is good to play out of doors while the sun is shining. Some of the girls are going to walk today with their teacher. Exercise in the open air is a great aid to good health."

Home after skating.

"Before I eat my dinner, I will rest a few moments. The best way to rest is to lie flat on my back for 15 minutes. For my dinner I must eat some fresh vegetables and drink some milk. I do not like vegetables but I do eat them. I will set the table for mother. We had a splendid skate and this exercise made me hungry. My domestic science teacher says it helps digestion to have a pleasant time at meal time; so tonight I will tell father and mother how much I have improved in my work this month. It may be because I have tried this whole month to do each day the things that I have learned are necessary to good health.

"Some of my classmates are coming now to tell you more about the Good Health Rules."

Conclusion

Suggestion — Have ten children dressed in middies each carrying a poster mounted high over the shoulders. The first eight girls, and verses recited are to emphasize the eight health rules, the last two are to make a direct appeal to the mothers for their help.

The Tea and Coffee Honor Roll

By SARAH M. CAGWIN

New York City Schools

SINCE the first week of school we have been following two lines of homework, both of which are to help us form right habits or to help us break wrong ones. One line has to do with our own health, the other has to do with our mother's happiness. For instance, the first week we started very simply. On the health side, we tried to drink six glasses of water every day. On the mother's happiness side, we tried to put our book bag or pack of school books where she wanted them kept every day. Every night before we went to bed we jotted down on a slip of paper made out for the purpose, with the days of the week and the two headings, whether we had succeeded or not.

The next two habits we tried to form, or rather to break, were the giving up of tea and coffee drinking, and the stopping, or the attempting to stop, of a few of our disputes and quarrels with our brothers and sisters, so annoying to our mothers. These are hard to do and we are still working on them. In fact, we keep on working on all the old ones besides taking up new ones from time to time.

We bring in our reports to class every week, and a few are read—as many as the time will allow. All the reports are collected by the teacher, and after she looks them over, she sometimes talks over with us one that shows poor homework, or one that is particularly good.

The Tea and Coffee Honor Roll

To help on our Health Homework in regard to giving up tea and coffee, we have a large cardboard poster hung in a conspicuous place in our school kitchen. At the top, in red letters, it says, "Girls Who Do Not Drink Tea or Coffee." Underneath, the girls who have the right to put their names there, do so, and those, who earn the right by giving up both drinks and by proving it by going without for one month, theirs later. These names are added, as the weeks go by, until a surprisingly long list is made.

FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

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Canned Spinach as a Source of Botulism

Results of Examinations Conducted by Microbiological Laboratory of the United States Bureau of Chemistry

By RUTH B. EDMONDSON, CHARLES THOM and L. T. GILTNER *

A PREVIOUS paper[1] from this laboratory presents the survey and experimental work with canned spinach performed during the season of 1920-1921, following several outbreaks of botulism from this source. The records show that about 300 cans of spinach were handled, although only 174 cans of the product were tested bacteriologically and B. botulinus was found in six of these. The cans examined during that investigation had been packed for not less than six months. The results of cultural examination of the commercial product were tabulated against a rigorous physical examination by two of the authors of the present paper and harmonized completely for the whole series. Aside from a single can in the inoculated series, physical evidence of spoilage was also correlated with toxicity in the 24 cans experimentally inoculated. In certain of the outbreaks reported during that season, the spoiled condition of the spinach was clearly indicated, but in other cases such correlation was denied, although no evidence of careful examination of the spinach was presented.

In the outbreak in Indiana[2] during the winter of 1921-22, involving nine cases and four deaths, evidence of spoilage in the product was also denied by those who opened and consumed the food. Similarly in this case evidence of adequacy in the examination given at the time the can was opened is lacking, while the further treatment of the product was clearly destructive of such evidence, if there had been any, although study of the empty can gave some evidence of "swell." The organism, B. botulinus, type A, was readily recovered from the small quantity of the food which was actually available for examination. This clearly indicates an active contamination with abundant spores, since the organism was secured from inoculation with the material after heating at 80-85 deg. C. for 20 minutes. The spinach cans involved were size No. 2½ and bore not only the brand of the company but a stamped code mark. The distribution of canned spinach bearing these identifying marks was then followed by state and national food inspectors and lots were overhauled in many widely separated localities. From these lots the Microbiological Laboratory recieved 109 samples, totaling 653 cans from 19 different states. These were distributed in size as follows: 459 cans were number 2½; 161, number 10; 25, number 1; and 8, number 2. Although the inspectors had been asked to search for swelled cans and to send in all swells found, only 49 swells were received from a total of many thousands of cans examined.

Packing Practice Followed Rules

This survey confirmed the statements of the dealers that few, if any, swells were encountered in the shipments of this particular pack. The packer gave the total under this code mark as about 150,000 cases put up in April, 1921. The packing process in the cannery as reported followed the rules prescribed by the State Board of Health and was followed by spreading the cans over broad areas in the store room to cool, piling the product of succeeding days in masses, and permitting the entire pack to stand about one month before labeling and casing. No batch mark was used; the entire output of spinach for the factory and season bore the single code mark. At the end of the holding period, the spinach was sorted and prepared for shipment in the usual way. During the sorting 0.54 per cent of the total was rejected. A small fraction of 1 per cent of spoiled cans was subsequently reported by the trade. Under these conditions it was believed that all possible precautions had been taken to insure a safe pack.

A botulism outbreak from the product of such a factory presents, therefore, features not encountered in previous incidents of this character. The use of methods theoretically and, as a general proposition, practically adequate is clearly shown by the abstract of results presented. The effort to produce safety by adopting tested and prescribed practices failed in this case, either on account of some fault of apparatus or mistake of a workman involving an undetermined part of the pack. In an output so great as this, carried under a single code mark, no provision to trace such an occurrence is presented. In sorting, presumably all cans which had reached the stage of actual swells were removed, but early stages of fermentation might readily go unnoticed, even after approximately one month of incubation at storeroom temperature. No provision was made to detect gross failures in handling the contents of a single retort or cooker or even of a whole day's pack.

Several workers (Dickson, Burke, Meyer, Weiss) have clearly shown that in long series of tests with spores of bacillus botulinus subjected to heating, growth of some of the cultures may be delayed much longer than a month. In a loss aggregating perhaps ten thousand cans, as in this pack, the source of poisoning might be a single infected can which escaped sterilization, although previous studies lead us to believe this is improbable. It was more probably due to failure to obtain sterility in some particular lot of cans, a considerable percentage of which be-

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* From the Microbiological Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

[1] Koser, S. A., Edmondson, R. B., and Giltner, L. T., Observations on Bacillus Botulinus Infection of Canned Spinach, J. A. M. A., Oct. 15, 1921, Vol. 77, p. 1250-1253.

[2] Beall, C. G. Report of an outbreak of botulism. Jour. A. M. A. 79 (1922), No. 1, p. 38-39.

came swells promptly and were thrown out at the time of casing.

Such an incident encountered in factory canning shows the necessity of providing the means of judging the safety or sterility of groups of cans subjected to identical treatment, before the identity of the batch is destroyed and before such lots are released from observation, instead of depending entirely upon routine examination of the individual can, as was the practice of this concern. This purpose may be accomplished either by batch marks with adequate records or by storing each lot as a unit so that routine examination will show in which lots failure for any cause has occurred. When underprocessed lots are detected in this way, the experience of recent surveys plainly teaches (Koser,[3] Doolittle,[4] Thom[5]) that the whole lot involved should be carefully sorted and the part entirely free from signs of swell should be adequately reprocessed before distribution.

Bacteriological Survey Necessary

The circumstances surrounding this botulism outbreak necessitated a bacteriological survey of this particular pack and a re-examination of canned spinach as a possible cause of botulism. For this purpose the first 325 cans of spinach received were examined physically and bacteriologically.

Each can to be opened was given careful inspection of its condition—whether flat, dented or swelled in any degree. If flat the number of "inches of vacuum" determined with a vacuum gauge was recorded. The can was opened with bacteriological precautions and a subsample was taken for culture and feeding, if necessary. The odor, appearance, and texture of the spinach were next carefully observed and the records were held for comparison with the results of culture.

The correlation between the bacteriological findings and physical evidences of soundness or spoilage was so close and so fully confirmed the 1921 survey in which cans passing all physical tests proved sterile, that further bacteriological examination was limited to cans whose physical condition warranted it.

Every container that showed the slightest indication of swelling was examined bacteriologically. As already noted, particular requests had been made for swelled containers but only 49 were received. Seven cans designated by us as "dented swells" were also received and examined. These were evidently swelled from severe knocking or denting of the side or ends and in every case but one contained spinach of characteristic odor and appearance.

The total number of cans finally examined was 401. Two hundred and thirteen more were given a physical examination only. The remaining 39 cans were either discarded because of their leaking condition or held for future observation. Of the 401 cans examined bacteriologically 360 were sterile. These sterile cans included 19 of the swelled containers and 6 of the "dented swells." Only two flat cans containing spinach of characteristic odor and appearance were not sterile. Only twelve of all the flat cans examined contained viable organisms and all of these cans but the two mentioned above contained spinach of questionable odor.

Only 30 of the 49 swelled cans contained viable organisms. Of the 19 sterile "swells," the metal in 18 was blackened and corroded and the spinach was "off" in odor and appearance. Twenty-one of the swelled containers were tested qualitatively for hydrogen and carbon dioxide before a bacteriological examination was made. Hydrogen was present in five of these and carbon dioxide was found in all but two. These cans were extensively corroded inside. In the cans showing both carbon dioxide and hydrogen, spoilage may have been the combined result of bacterial activity and chemical action of the product on the can. If this supposition is correct, then in these sterile swells the bacteria were killed either by their own metabolic products or by the chemical compounds formed in the corrosion of the can, or possibly by the combination of the two agencies.

No attempt was made to identify the various organisms recovered from the unsterile cans. Microscopic examination of cultures showed cocci, in pairs, short chains and irregular masses, small non-spore-forming bacilli and a few large bacilli. Spores were never seen in the large bacilli, but, since their form and measurements corresponded roughly to those of B. botulinus, feeding tests both from the original spinach and from cultures were made. In only one culture, however, was Bacillus botulinus recovered. This came from a swelled number 10 can. The organism was not found in pure culture in this can. Small colon-like bacilli predominated. Repeated feedings and injection of the spinach juice gave negative results, but type A B. botulinus was repeatedly demonstrated in anaerobic cultures made from the spinach.

A small sample of the original spinach responsible for the Indiana outbreak was found to contain a strain of B. botulinus type A. Cultures from heated (80-85 deg. C. for 20 minutes) and unheated bits of the spinach were highly toxic to guinea pigs fed with small amounts. The two empty cans from which the spinach had been taken were also examined at the same time. The dried bits of spinach adherent to the inside of the cans and from one small spot on the top of one can were soaked and washed off with sterile physiological salt solution. These washings were highly virulent and B. botulinus (type A) was identified in each.

Since the toxic material in this outbreak came from cans not recognized as swells by the one who opened them and since those consuming the food found nothing "unusual" about it, a series of flat cans was inoculated with B. botulinus and incubated. Daily observations included the condition of the can, whether flat or swelled, the odor of the spinach and toxicity tests. Sixty-nine normal cans of the brand concerned in the outbreak were thus punctured, and inoculated in this experiment. Strict aseptic conditions were followed in every operation. One end was punctured and a sample for bacteriological examination withdrawn. The puncture was then plugged tightly with sterile cotton and as soon as possible the contents were inoculated with detoxified B. botulinus spores. This inoculum came from a culture in dextrose beef infusion seven days old which was centrifuged, washed and heated at 80 deg. C. for 20 minutes to destroy toxin. After inoculation the cans were immediately resealed with a tin patch and solder. The inoculum was put into the center of the mass of spinach in the can, and, after sealing, the can was thoroughly shaken to mix the inoculum with the spinach and to discover possible leaks in the patch. The cans were then incubated at various temperatures and observations made as indicated above.

In the first series, 38 number 2½ cans were inoculated with 0.5 cc. of physiological salt solution containing toxin-free spores of B. botulinus. Half of these incubated at 37 deg. C. and half at 30 deg. C. The Boise strain of B. botulinus was used. This strain was originally isolated by us from canned asparagus[6] and is highly toxic.

Tested on Guinea Pigs

Of the cans incubated at 37 deg. C., one can was opened each day from the day of inoculation, the odor and acidity of the spinach were noted, bacterial cultures were made, and a sample was fed to a guinea pig. None of the flat cans in this series having a normal odor when opened were toxic to the experimental animals, but bacillus botulinus was recovered in culture from each can, showing that the viable organisms were present. No can of this series showed any signs of swelling until the fifth day when one was found to be a "hard swell." The odor from this swelled can was bad and a 5 cc. sample from it killed a guinea pig weighing 350-450 grams within 24 hours. Two more swells developed on the sixth day. Only one of these swells was fed and this proved toxic. The odor in both was bad. On the eighth day the flat can opened for the daily examination and feeding had a distinctly foul odor. The contents of this can also proved toxic. On the tenth day the end of a flat can that was examined bulged out when flamed previous to opening, gas escaped when the tin was punctured, and the odor was bad. The contents of this can were toxic when fed. One swell developed on the tenth day. Another flat can opened on the fifteenth day showed enough gas present to make the end bulge when flamed. The odor in this also was bad and the contents were toxic. No more swells developed, but another toxic flat can was found whose end bulged on flaming and whose odor was bad when opened on the twenty-third day. One can was still flat when examined on the forty-sixth day. When opened its odor was good and a sample fed from it caused neither symptoms nor death in a guinea pig.

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[3] Koser. Loc. cit.

[4] Doolittle, R. E. Botulism problem in the United States. Canner, 53 (1921), 25, p. 29-30. Also in The American Food Journal, Nov., 1921.

[5] Thom, Charles. Botulism from the Regulatory Viewpoint. American Jour. Pub. Health Vol. XII, No. 1, January, 1922, pp. 49-53.

[6] Thom, Charles, Edmondson, Ruth B., and Giltner, L. T. Botulism from Canned Asparagus. Jour. A. M. A., Sept. 20, 1919, Vol. 73, pp. 907-912.

At 30 deg. C. development of swells was somewhat slower. Two "springers" developed on the sixth day after inoculation, two springers and a flipper on the seventh day, a "hard swell" on the thirteenth and another on the fourteenth day, two swells on the sixteenth day, two on the seventeenth, one on the eighteenth, and no more until the twenty-ninth and fortieth days, respectively. As before, each flat can that was opened for the observation and whose contents had a normal odor proved non-toxic, whereas all that were definitely swelled had a bad odor and were toxic. There was only one flat can in this series of 19 cans that had a bad odor and puff of gas on opening. This can was toxic.

Eleven number 10 cans were inoculated with the strain of B. botulinus isolated from the spinach actually involved in the Indiana outbreak. One cubic centimeter of physiological salt solution containing 4,250,000 toxin-freed spores of B. botulinus was put into each can and the cans were incubated at room temperature (22-25 deg. C.). The first swelled can developed on the fourth day, another on the fifth day, one on the twelfth, one on the seventeenth, and two on the thirtieth, respectively. The last can was opened on the forty-first day. This was still flat, but one end bulged when flamed and the odor was definitely off. As before, each of the swelled cans whose contents had a bad odor was also toxic to guinea pigs. In this series there was one can that, while recognized by one examiner as not altogether normal, was still so far from showing definite spoilage that in all probability it would have passed the consumer or anyone not constantly examining good and bad canned spinach. A 5 cc. sample of this fed to a guinea pig caused death in 24 hours, while another guinea pig injected subcutaneously with 0.1 cc. showed symptoms of poisoning in 48 hours and died in nine days.

The same strain of B. botulinus was put into 18 number 2½ cans. Eleven cans were incubated at 37 deg. C. and 7 at 30 deg. C. Of those incubated at 37 deg. C., the first swells (2) developed on the sixth day, one on the tenth day, and two on the twelfth day, respectively. Every flat can whose contents had a normal odor failed also in these experiments to produce symptoms or death in guinea pigs. In this series also there was one flat can that, while described as "off" by the examiner, would, no doubt, have passed the average examination, especially of those unfamiliar with spinach. This can was toxic also.

In the cans in this series incubated at 30 deg. C. there was no swelling until the sixth day. The second swell developed on the tenth day. No more swells developed in this series. The last can was opened on the nineteenth day after inoculation. Though flat, this can had an off odor to two of us who have examined spinach constantly. The same can, however, was passed as fit for food by others in the laboratory not so familiar with the product. A 5 cc. sample promptly killed guinea pigs by feeding and by injection of 0.2 cc.

The irregular results obtained in these inoculation experiments may be the result of sealing the cans without exhaustion, then producing an inhibitive aerobiosis by shaking the air present into the mass. Since the number of inches of vacuum varied from 0 to 4 inches in No. 10 cans and from 0 to 12 in No. 2½ cans, the quantity of air introduced into the can during inoculation would vary greatly. This introduces one questionable factor, but in spite of possible explanations these discordant results emphasize the necessity of precautions in dealing with spinach canning to insure an adequate inspection of all packs. Among the tangible results of the survey and experimental work, the danger from cans showing spoilage was repeatedly confirmed, even though some dangerous ones failed to give adequate warning. The presence of readily recognizable signs of decomposition, such as gas and foul odor, is a warning of conditions which may be dangerous, but their absence does not entirely free canned spinach from suspicion.

Some other means, therefore, must be found to eliminate the contaminated cans which develop slowly. In every inoculation experiment reported here and in many other experiments in this laboratory the majority of all the inoculated cans show prompt development of signs of spoilage when incubated at blood heat. One line of control, therefore, lies in maintaining the identity of every lot of cans handled through an observation period at a temperature favorable to the development of spoilage. In every case in which spoilage indicative of underprocessing is found, all spoiled cans should be removed from the lot involved and the part apparently sound should be thoroughly reprocessed. This method is already in successful use in the commercial handling of certain products. Among other precautions it is also desirable to mark batches of canned food in such a manner that the history of every can will be available to the packer. Neither of these precautions was taken in handling this spinach.

Abundance of Liquid Advisable

The relation of solids to liquid in the cans appeared to be another factor in the difficulties encountered. The mass of stems and leaves in many of these cans was so closely packed as to leave very little room for brine. In fact, no free liquor was visible on opening most of the smaller cans (No. 2½), and samples for bacteriological examination were sometimes obtainable only by thrusting a pipette deep into the mass —working it to enlarge the hole and waiting for the necessary liquor to accumulate before withdrawal. The presence of abundant liquor is a distinct advantage in processing, since a closely packed mass of succulent stems and leaves depends upon conduction rather than convection for the transference of heat to the center of the can. This was clearly demonstrated by a laboratory pack put up in co-operation with Dr. Lund of the States Relations Service in which No. 2½ cans were packed to hold 16 ounces of spinach, inoculated with great numbers of B. botulinus spores, and processed in a pressure cooker. Although some of these cans were heated for a much shorter period than the commercial packs, every can proved sterile, in spite of mass inoculation which adds greatly to the difficulty of obtaining sterility. Bureau of Chemistry inspection reports show that when spinach handled in large quantities is held in car lots for 30 to 40 hours the whole mass will sometimes heat, become "steamy" and have a foul odor. Spinach showing only a minor contamination at the start would be grossly contaminated at the end of such a period. Even under better conditions respiration in such masses will produce some heat and an atmosphere largely of carbon dioxide with abundant transpired moisture, thus making a condition favoring anaerobic decomposition. Spinach, therefore, requires most careful sorting, washing, and packing with ample brine to insure conditions as favorable as possible for sterilization.

Another difficulty encountered in combatting botulism from canned spinach is that B. botulinus acting alone does not disintegrate plant tissues, although it does swell the can when development has become pronounced. Once opened, even the most toxic can of spinach, unless under heavy enough gas pressure to "bubble" after opening, appears fairly normal to the eye. If the condition of can and odor of the spinach are forgotten or disregarded, the appearance of the spinach itself would not insure its condemnation.

Summary

The Microbiological Laboratory of the Bureau of Chemistry obtained for study 653 cans of the particular pack of spinach responsible for the outbreak of botulism at Kendallville, Indiana. The appearance of the unopened can, the amount of vacuum present, and the odor and appearance of the spinach were compared with the results of bacteriological culture from 401 of these cans. In this series, cans found free from evidence of spoilage, as determined by inspection, were free from evidence of bacterial activity as determined by culture. Cans showing swell were found to carry active contaminations with bacteria or to be pronounced examples of chemical corrosion. In so far as the samples received from commercial sources were concerned, inspection by persons familiar with canned spinach was found to be a safe basis for passing or condemning these samples. Exactly the same results were obtained in the investigation of a number of separate brands in 1921.

In cans inoculated for experimental purposes, resealed and incubated, individual discordant examples were encountered. Out of 64 cans in this series, three were found to have reached a stage of toxin formation sufficient to kill guinea pigs before gas or odor or both had developed sufficiently to make possible their removal by inspection. Among large numbers of cans handled under widely different storage conditions, the occurrence of an occasional can in which toxicity has reached the danger point before gas or swell is detectable is clearly a possibility in dealing with spinach. Hence careful inspection before opening should be followed by actual recooking of this product as it comes from the can.

Incubation under observation at the factory is recommended, with such precautions in identifying the lot or batch as will insure the detection of undercooked lots of cans from any cause.

A Study of the Preservation of Fish in Ice

Results of Experiments Conducted by Investigators of the United States Bureau of Chemistry

By L. H. ALMY, E. FIELD and H. R. HILL
Of the Bureau of Chemistry

THE present investigation was undertaken for the purpose of determining the relative keeping qualities of fish of different species when held in ice in the uneviscerated and eviscerated condition. Fish from which the entrails have been removed are usually designated by the trade as "gutted" fish; the uneviscerated are termed "round" fish. With few exceptions all large and most medium-size fish are sold gutted, while the smaller sizes are sent through the marketing channels in the round condition.

The intestinal tract of fish contains a considerable number of bacteria when food is present. Anderson[1] states that the rate of decomposition of round fish increases with the amount of food in the stomach at the time of capture. The empty tract is often sterile, according to Obst[2] and Hunter[3]. Gutting as usually practised by the fisherman tends to result in contamination of the wall of the belly cavity and of the cut sections of tissue with any bacteria that may be present in the intestines. On the other hand, round fish packed in ice become bruised and pressed during shipment, the conditions being favorable for forcing out some of the intestinal contents through the vent or through fact that decomposition of the flesh the belly wall. Bearing in mind the may proceed from an initial contamination of the mouth and gills[4], as well as of the integument, particularly when bruised and torn, it can readily be seen that round fish packed in ice are also in favorable condition for spoilage. Browne[5] believes that the greater part of the decomposition of round fish in ice is due to autolysis rather than to bacteria, as the flesh of spoiled round fish showed few bacteria as compared with that of spoiled gutted fish.

With respect to dry picked and dry packed poultry, Pennington[6] decided that undrawn birds as a rule keep better than the drawn, the reason being that the opportunities for bacterial invasion of the tissues are greater when the viscera are removed by commercial methods than when the contents of the body cavity are allowed to remain undisturbed during the handling and dry preservation in the marketing period. The difference between fish and poultry lies in the fact that during marketing fish are customarily held in crushed ice, whereas dressed chickens for the most part are preserved by dry refrigeration.

The preservation of fish in ice is an old and established practice. The ice in the process of melting absorbs heat from the fish and the cold water, bathing the surface of the fish, removes more heat. The ice and water produce other effects which are less desirable. The ice adds to the weight on the fish in the lower layers and thus subjects them to increased pressure. The larger and irregular pieces of ice press on the surface of the fish, with consequent distortion of the shape and softening of the tissues. This effect is aggravated by the melting of the ice which causes the fish to shift from one position to another. The water from the melting ice extracts salts and other substances from the flesh by osmosis and solution. A study of the extent of such changes was included as a part of the present investigation.

Methods

The fish used were sea trout (Cynoscion nebulosis), mullet (Mugil cephalus), and spanish mackerel (Scomberomorus maculatus) caught in the Gulf of Mexico near Pensacola, Florida, in trammel nets. They were prepared for the experiments within 24 hours after they were caught. A sufficient quantity of washed fish was divided into two lots, one of which was gutted according to commercial methods and the other left in the round condition. The greater portion of each lot was packed separately in two layers with three layers of crushed ice alternating in specially constructed boxes. These boxes were made of white pine and measured 30 inches high and 20 inches square on the inside. The height thus compares with that of a standard 200-pound fish barrel. A hinged door at the top and bottom permitted periodic examination of the fish in the individual layers. Holes in the bottom allowed the water from the melting ice to escape. The packages were re-iced when necessary. During the holding period the packed boxes were kept in a cork-insulated storage room provided with an overhead ice compartment. A record of air temperatures in the room was obtained by means of a thermograph.

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[1] Anderson, A. G. On the decomposition of Fish. 26th Annual Report of Fishery Board of Scotland, 1907 (1908).

[2] Obst, M. M. A bacteriologic study of sardines. Jour. Infect. Dis. 24 (1919), 167.

[3] Hunter, A. C. Bacterial decomposition of salmon. Jour. Bact. 5 (1920), 358.

[4] Hunter, A. C. loc. cit. p. 360.

[5] Browne, W. W. Do bacteria play an important part in the initial stages of decomposition of fish during storage in ice? Abst. Bact. 2 (1918), 6.

[6] Pennington, M. E. The comparative rate of decomposition in drawn and undrawn market poultry. U. S. Department of Agriculture, Bureau of Chemistry Circular No. 170 (1911).

Three experiments were performed at different times on each species of fish. For the shrinkage tests five tagged fish in the top layer and five in the bottom layer were weighed individually at the beginning and at five-day intervals, up to the end of the experiment. Determinations of solids, ether extract, acidity of ether extract (acid value), ash, total nitrogen, and ammonia and amine nitrogen were made on composite samples of two fish from each layer of gutted and round fish at the beginning and end of each maximum holding period. The official methods of the Association of Official Agricultural Chemists[7] were employed. The moisture was determined by heating in vacuo and the nitrogen was determined by the Kjeldahl-Gunning method. The ammonia and amine nitrogen and the acid value of the "fat" were estimated by methods previously described[8].

Determinations of shrinkage and composition were likewise made on representative specimens of fish from the same lot which were held for three to seven days out of contact with ice in the holding room. A small number of round fish were immediately examined for the purpose of determining the character and amount of the intestinal contents.

TABLE I—CHANGE IN WEIGHT OF FISH HELD IN ICE

Fish	No. Days Held	—Change in Weight— —Round Fish— Top Layer %	Bottom Layer %	—Gutted Fish— Top Layer %	Bottom Layer %
Sea Trout	5	+2.0	+1.5	+2.4	+1.2
	10	+1.7	+0.4	+2.9	—1.9
	15	+1.7	0.0	+2.3	—2.1
Mullet	5	+1.1	+1.0	+1.3	+1.1
	10	+0.1	+1.6	—0.6	—0.8
	15	1.0	+0.4	+0.3	—2.5
Spanish Mackerel	5	+2.4	+1.6	+1.4	+0.9
	10	+1.4	—0.2	+1.2	—1.6

Results of Experiments

It was difficult to detect much difference in the rate of spoilage of sea trout, mullet, and Spanish mackerel held out of contact with ice for three to seven days at temperatures ranging from 7 deg. to 16 deg. C., though the Spanish mackerel appeared to decompose a trifle faster than the others. The proportion of ammonia and amine nitrogen in the flesh increased rapidly during the progress of the decomposition, the amount at the end of the holding periods being usually over 1000 per cent higher than at the beginning. On the basis of macroscopical appearance and ammonia and amine nitrogen content, the round sea trout and mullet kept slightly better than the gutted, the reverse being true of the Spanish mackerel. On account of the varying fat content and the concomitant variations in the fatty acid value[9], no relationship between quality and acid value could be established. The shrinkage, which was a trifle higher in the gutted than in the round specimens, was high, averaging about 10 per cent and reaching approximately 22 per cent in an extreme case.

As judged by a macroscopical inspection, the sea trout and Spanish mackerel preserved in ice kept a little better in the round than in the gutted condition, whereas the gutted mullet kept as well, if not better, than the round. In all cases, however, the round fish which were full of feed spoiled more quickly than the corresponding gutted fish, a characteristic softening of the tissues adjacent to the belly wall being frequently observed. Usually in the case of all gutted fish, regardless of species, a discoloration of the wall of the belly cavity occurred toward the end of the maximum holding period. Food residues, i. e., sand, mud, diatoms, algae, and pieces of aquatic plants, were always present in the intestinal tract of the mullet. The stomach and intestines of the other two fish were often quite empty, particularly in the case of the sea trout. The food residues of these fish consisted for the most part of sections of fish and shrimp. The character of these residues in agreement with our knowledge of the food habits of the fish, sea trout and Spanish mackerel preying on smaller fish and mullet feeding chiefly on minute animal matter extracted from the mud. The intestinal contents of the mullet were undoubtedly different in character than those of the other two fish, and it is quite possible that the difference between mullet and the other fish, in so far as the advantages of gutting are concerned, was due to this fact, as well as to the dissimilarity in the proportion of feedy fish. If the intestines of freshly caught fish were always fairly uniformly free from food residues (and therefore also comparatively low in bacteria) little would be gained by gutting. As such is not the case, however, it appears that the present commercial practice of gutting most species is to be commended.

The sea trout and mullet preserved in ice kept in marketable condition for about five days longer than the Spanish mackerel.

The first evidence of a change in the fish held in ice was an increase in weight in both top and bottom layers, the fish in the top layers absorbing more water than those in the bottom (Table I). By the tenth day the gain in weight had decreased markedly and in the bottom layers a loss in weight was usually indicated. From the tenth to the fifteenth day the fish continued to lose in weight in both layers.

The changes in weight were accompanied by pronounced changes in the composition of the flesh. The flesh of fresh fish of the same species has a fairly uniform content of fat and ash-free solids. The proportions of fat

TABLE II—CHANGE IN COMPOSITION OF FISH HELD IN ICE

Analysis of Flesh

Fish	No. Days Held	Change in Weight Top Layer %	Change in Weight Bottom Layer %	(1) Fat- and Ash-free Solids Top Layer %	(1) Fat- and Ash-free Solids Bottom Layer %	(2) Approx. Increase in percentage of moisture* Top Layer	(2) Approx. Increase in percentage of moisture* Bottom Layer	(3) Total Nitrogen in Percentage of Total Nitrogen of Fresh Fish Top Layer	(3) Total Nitrogen in Percentage of Total Nitrogen of Fresh Fish Bottom Layer	(4) Ash in Percentage of Ash of Fresh Fish Top Layer	(4) Ash in Percentage of Ash of Fresh Fish Bottom Layer
Sea Trout	0	0.0	0.0	18.65	18.65	0.0	0.0	100	100	100	100
Round	15	+1.7	0.0	18.58	18.38	0.1	0.3	94	94	72	73
Gutted	15	+2.3	—2.1	18.38	18.42	0.3	0.2	95	94	72	72
Mullet	0	0.0	0.0	19.69	19.69	0.0	0.0	100	100	100	100
Round	15	—1.0	+0.4	19.20	19.02	0.5	0.7	96	96	76	81
Gutted	15	+0.3	—2.5	17.86	18.55	1.8	1.1	89	94	62	68
Spanish Mackerel	0	0.0	0.0	19.73	19.73	0.0	0.0	100	100	100	100
Round	10	+1.4	—0.2	18.90	19.44	0.8	0.3	97	97	80	77
Gutted	10	+1.2	—1.6	18.80	19.16	0.9	0.6	95	99	76	84

* Derived from the figures in Column No. 1.

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[7] Association Off. Agric. Chem. Methods of Analysis (1920), 209.

[8] Clark, E. D., and Almy, L. H. A chemical study of food fishes. J. Biol. Chem. 33 (1918), 486, 487, and 493.

[9] Clark, E. D., and Almy, L. H. loc. cit p. 495.

and ash-free solids in the ice-stored fish was always lower than in the fresh (Table II), which indicates that whether the fish increased or decreased in weight they were invariably more watery than when freshly packed. The approximate increase in the percentage of moisture was usually greater in the top layers.

A decrease in the proportion of the substances composing the total solids of the flesh logically attends an increase in moisture. If all of the constituents of these solids decreased in the same proportion, it would be difficult to prove that any material had been extracted or expressed from the whole. In these experiments it was determined that the change in the proportion of mineral matter was very much greater than that which occurred in the nitrogenous material, and that, therefore, a loss in inorganic constituents was definitely indicated. A substantial loss in some of the organic matter in most of the fish, particularly in the gutted fish in the bottom layers, is inferred from the coincident gain in moisture content and loss in weight.

The fish in the top layers at all times presented a better appearance and underwent less chemical change than those in the bottom. The height of the container used was similar to that of a 200-pound fish barrel and the average quality of the fish therein represents that which would be found if a barrel had been used. The quality of the product in the top layers may be considered to compare with that of fish held in a shallow box. The advantages of a shallow box, where the pressure of the column of ice and fish is comparatively slight, over a tall container like a barrel are apparent.

Summary

Sea trout and mullet stored in ice kept in marketable condition for about five days longer than Spanish mackerel. The mullet only appeared to be improved in keeping quality by gutting. Regardless of species, the round fish which were full of feed spoiled more quickly than the corresponding gutted fish. The weight of the fish first increased, then decreased, a net loss usually occurring in the fish in the bottom layers. A loss in the mineral and organic constituents during the longer periods, particularly in the case of gutted fish, was indicated. The results do not justify a recommendation of a change in the present commercial practice of gutting most species, but illustrate the advantage of a shallow container like a box over a tall container like a barrel as shipping packages for iced fish.

Self-Raising Flour Law in Australia

Editor The American Food Journal:

Through the medium of a friend we have had the pleasure of reading the article in your May issue relative to self-raising flour.

In view of the statement contained therein, that there is no official standard for self-raising flour in your country, we thought it might interest you to peruse the regulations in force in this part of the world which we may say, have done a great deal to prevent the public from being defrauded.

Yours faithfully,
G. WOOD, SON & CO., Ltd.,
R. A. Harfield, Director.

The following is the South Adelaide, Australia, Australian regulation on self-raising flour:

> Self-raising flour is flour to which the ingredients of baking powder have been added. It shall liberate not less than forty-five grains weight of carbon dioxide per pound when moistened and heated, and it shall contain not more than seven grains weight of sulphates, calculated as calcium sulphate, per pound.

Dried Whey May Be Profitable

Dairy by-products are now being used in various new ways as a result of investigations by the United States Department of Agriculture.

Good results have been obtained particularly in the manufacture of dried whey. From 100 pounds of the whey were obtained 4 pounds of crude sugar and 1½ pounds of dried whey containing about 30 per cent of albumin. The dried whey was sold to a laboratory making baby food, at a price which resulted in a satisfactory return for the whey.

Dried whey and dried buttermilk are being fed experimentally to laying hens at one of the department farms. In the first half of the 12-month experiment the pen of hens receiving dried whey produced eggs at a rate comparing favorably with results obtained with other kinds of feed.

Machine for Stitching Containers Has Large Capacity

The Monitor container end stitchcer, manufactured by the Latham Machinery ery Company, 1143 Fulton Street, Chicago, is stated to have a capacity per day of from 2,500 to 3,000 containers per day. The stitcher is a practical machine for sealing both fibre and corrugated containers as well as for stitching bags. In operating the machine the bottom of the fibre or corrugated container is folded and placed under the head of the machine. By pressure on a foot lever as many stitches as are necessary to properly seal the container re taken. The company claims both strength and neatness for the stitches and points out that the wire is proof against changes in weather conditions and that handling in shipment cannot dislodge them.

Government Adopts Food Standard

(Continued from Page 12)

mal for whole milk, and with or without cacao butter and, or flavoring material. It contains not less than twelve per cent (12 per cent) of milk solids.

6. Cocoa, powdered cocoa, is chocolate deprived of a portion of its fat and pulverized, and contains, on the moisture- and fat-free basis, no greater percentage of total ash, ash insoluble in hydrochloric acid, or crude fibre, respectively, than is found in moisture- and fat-free chocolate.

7. "Breakfast cocoa" is cocoa which contains not less than twenty-two per cent (22 per cent) of cacao fat.

8. Sweet cocoa, sweetened cocoa, is cocoa mixed with sugar (sucrose), and contains not more than sixty-five per cent (65 per cent) of sugar in the finished product, and, on the moisture-, sugar- and fat-free basis, no greater percentage of total ash, ash insoluble in hydrochloric acid, or crude fiber, respectively, than is found in moisture- and fat-free chocolate.

9. Sweet milk cocoa is the product obtained by grinding cocoa with sugar, with the solids of whole mlk, or the constituents of milk solids in proportions normal for whole milk, and with or without flavoring material. It contains not less than twelve per cent (12 per cent) of milk solids.

c. EDIBLE VEGETABLE OILS AND FATS

2. Cacao butter, cocoa butter, is the edible fat obtained from sound cacao beans seeds or Theobroma cacao L., or other closely related species) either before or after roasting.

CONDIMENTS (OTHER THAN VINEGAR AND SALT)

10. Cayenne pepper, cayenne, is the dried, ripe fruit of Capsicum frutescens L., Capsicum baccatum L., or some other small-fruited species of Causicum. It contains not less than fifty per cent (50 per cent) of nonvolatile ether extract, not more than one and five-tenths per cent (1.5 per cent) of starch, not more than twenty-eight per cent (28 per cent) of crude fibre, not more than eight per cent (8 per cent) of total ash, nor more than one and twenty-five hundredths per cent (1.25 per cent) of ash insoluble in hydrochloric acid.

Flavoring Extracts

5a. Oil of Cassia is the lead-free volatile oil obtained from the leaves or bark of Cinnamon cassia Bl., and contains not less than eighty per cent (80 per cent) by volume of cinnamic aldehyde.

A Plan for Obtaining Uniform Food Legislation

(Continued from page 8)

of action on the part of the various state legislatures. Conditions, sentiment and prejudices differ in the several states, and it is usually as the result of a somewhat extended campaign of education that uniform legislation can be secured. Adherence to a set plan usually involves some compromises and some surrender of views, and unless there is some strong body to crystallize public sentiment and to supply the necessary impetus for the various state legislatures, uniformity of legislation cannot be secured.

During the past few years several very fine pieces of uniform legislation having chiefly to do with commercial law have been enacted. This has been made possible, I believe, only through the work of the various bar associations. In the absence of some strong body to crystallize public sentiment, no progress is made. Even in so important a matter as the law relating to marriage and divorce, no appreciable gains are being accomplished in the direction of uniformity. Because of the social values involved, uniformity in marriage and divorce laws is more to be desired than in connection with any other subject; but owing to the absence of any organization to crystallize public sentiment, and also owing to the difference in public sentiment in the various states, uniformity of legislation seems an iridescent dream.

Believes Thoroughly in Principle of Food Law Uniformity

By CHARLES D. HOWARD
Chief of Division of Foods and Drugs,
New Hampshire Board of Health

CONSIDERING the general aspect of the matter first, the writer believes thoroughly in the desirability of uniform food laws. And as an academic proposition, so must every one. But in practice we encounter the difficulty that the enactment of food legislation, like every other kind, is almost certain to involve more or less extensive compromise between the interests of the consumer on the one hand and those of the manufacturer or producer on the other, the result being that where in one state a law may be secured which serves its implied purpose very effectively, that as enacted in another may be so weak as to fail largely, or serve no good purpose.

The same is true of national versus state legislation. Almost always the states find it possible to secure stronger, more effective enactments—laws which are freer from those clauses or provisions which tend to hamper enforcement officials. Consequently the present efforts on the part of certain food interests to deprive the states of the perogative they now enjoy of enacting and enforcing laws best calculated to protect their consumers should be firmly resisted.

To cite a concrete instance, the Sherley amendment to the Federal Food and Drugs Act exacts the illogical and wholly unwarranted requirement regarding misbranding of remedies that in addition to proving the claims for curative value to be false, the prosecuting officers must in every case also establish that such claims were made with the intent to defraud. While it might appear that one necessarily involved the other, yet in law such is far from being the case. In embodying this amendment in the New Hampshire law the "uniformity" plea as urged by the proprietary interests was disregarded, it being here unnecessary to prove fraud on top of false labeling in order to secure a conviction for misbranding.

To come to the specific part of your inquiry, a first reading of the proposed uniform vinegar law seems to disclose nothing objectionable. It would appear a good bill.

Model Vinegar Bill Now in Force in Illinois

By ALFRED H. JONES
Superintendent, Division of Foods
and Dairies, Illinois

This division does and always has stood for uniformity in all food laws. When I was Food Commissioner back in 1899 to 1914, I always was a firm advocate of uniformity and cooperation. In fact, it has been one of my hobbies and where the national food law could be used by this division without changing any of our present state laws I have always done so so that too great a burden would not be placed n the manufacturer. There is great need for a uniform vingera law as it is one of the easiest sophisticated commodities.

As to the proposed uniform vinegar law which you have printed in the December edition of the The American Food Journal, I might say that practically all this law is now in force in Illinois. We have the same definitions and the same standard, either in our law or in the standards adopted by the Food Standard Commission. Section 4 of the law is not quite as strong as our section 11 which prohibits the sale of all vinegar colored or mixed in imitation of cider vinegar. As to the branding of the barrel we have that already covered in our food law. I believe that the latter part of section 6 to be harsh and unjust. If I interpret it correctly a person who brings a bottle to a grocery store and asks for a pint of vinegar, the grocery man must label the bottle with the kind of vinegar delivered. That, to me, seems to be a tremendous lot of useless effort without accomplishing much good.

Outside of this objection I consider the uniform vinegar law excellent.

Wyoming Stands Ready To Consider Uniformity

By C. STANLEY GREENBAUM
Dairy, Food and Oil Commissioner
of Wyoming

IN the November issue of The American Food Journal appeared an editorial appeal for conferences between the food trade and state food control officials which would bring about a mutual agreement upon a uniform law which would protect consumers and relieve manufacturers of various hardships.

In the December issue, the American Cider and Vinegar Manufacturer's Association have responded in the form of a proposed uniform vinegar law. It is not the intention of the writer to take up this particular law, at this time, but rather to discuss a plan to obtain uniformitiy.

At the recent meeting of the Association of American Dairy, Food and Drug Officials, in Kansas City, one of the points which seemed to be well discussed in the round table talks was the one made by Dr. J. S. Abbott, secretary of the Institute of Margarin Manufacturers. Dr. Abbott suggested that different manufacturers present to food control officials their views on uniformity of a particular product and that these views be assembled, condensed and appropriate legislation be passed embodying the gist of the opinions offered. It is thought that such a plan as this is perhaps the most concrete and best way of settling the problem. It is true that most of the states have conflicting laws and regulations for all classes of food products and it is no more than fair to the manufacturers that these laws should be made uniform if, in so doing, the consumer is properly protected. A food commissioner should have no hesitancy in repealing or changing regulations to conform to a proposed uniform regulation or law if the consuming public in his state is not harmed thereby.

For a number of years the food officials of this country have discussed uniformity in their annual meetings but up to the present time no very definite steps have been taken to put into effect the results of these discussions. This state, for one, stands ready to take action in accepting the concensus of opinion of a group of manufacturers of certain products if this information is transmitted to it and proper provision is made that the public is protected at least in the same degree as it is now. It is hoped that all states would take similar action.

Let us, instead of discussing uniformity, try such a plan as has been suggested and actually put it into effect.

What the Canning Industry Has Accomplished

(Continued from page 18)

ciation of the difficulties and successes of the other association."

Literature

The association puts out numerous valuable bulletins of interest both to the trade and to the public copies of these may be had by addressing the association headquarters, Seventeenth and H Streets, N. W., Washington, D. C.

The association also publishes a valuable canners directory, a volume which offers a complete guide to the industry.

Looking Toward the Future

Like every forward looking organization the National Canners Association has many plans for the future. Not the least of these is a tentative scheme for a Bureau of Home Economics. Preliminary discussions of this plan are included in an association bulletin as follows:

Closer Touch with the Consumer

Everyone admits that if the consumers knew the real value of canned foods, their nutrition, safety and convenience, as well as the enormous amount of money being spent to safeguard every possible exigency, the canners' problems would be solved, and the business hazard would become normal with other industries dependent on nature and production.

The National Canners Association feels that a partial solution of this would be the establishment of a Bureau of Home Economics.

There is a wide and varied field for this bureau in connection with association work. The opportunity for co-operation with government and state departments is at hand and awaits only the setting in motion of the machinery by the association.

Cooperation with Government and State Officials

Domestic Science educational work is very complete on a national scale through the Federal Department of Agriculture and the Agricultural colleges and experiment stations. Federal and state funds are appropriated in all of these institutions both to home economics instruction at the colleges and to the carrying on of extension work which brings domestic science information direct to the attention of women on the farm and in rural communities throughout the United States.

Food Products Institute of America Organized

THE Food Products Institute of America, Newark, N. J., is the new title of the former Food Products Institute of New Jersey, which was organized last spring. The rapid accession to membership in the Institute of corporations of national standing made it desirable to adopt the broader title for the organization.

At a recent meeting of the Institute held in Newark, it was announced that arrangements had been made with the Bertha Elizabeth Rahm School of Cookery, East Orange, N. J., to make certain studies in dietetics and nutrition as part of the educational program of the Institute. The use and value of an emblem for publicity work was discussed. It is planned to adopt immediately an emblem which member companies may enclose in each package of their products and which will be suitable for use as bill posters, decalcomania, transparencies or in the form of drawings for newspaper work. During the discussion it was brought out that the phrase "100 per cent pure" is absolutely meaningless, because "purity" is a relative term. Phrases such as "free from admixture of foreign ingredients" were suggested as of greater practical value.

An "Eastern Exposition of Food, Health, Sanitation and Disease Prevention," was among the activities suggested for the Institute. The object of such an exposition, it was suggested, should be to show the visitor that foods carefully chosen and properly eaten are health protectors. A location easily accessible to a large part of the country east of the Mississippi River and the housing of the exhibits in a number of small buildings instead of one hall were urged.

The reorganized board of governors of the Institute was announced at the meeting by Secretary Frederic Dannerth, as follows: Samuel Mueller, president, C. F. Mueller Macaroni Company, Jersey City, N. J.; Frank L. Cheek, vice-president, Cheek-Neal Coffee Company, Nashville, Tenn.; John G. Knippenberg, president, Dairy Made Ice Cream Company, Paterson, N. J.; A. C. Navatier, president, Winkler and Navatier Co., Newark, N. J.

Samuel Mueller of the C. F. Mueller Macaroni Co., announced the personnel of the newly formed executive committee as follows: John Bruyn, treasurer, National Sugar Refining Company, Long Island City; F. W. Birkenhauer, treasurer, Wagner Pastry Company, Newark, N. J.; Alexander Moir, vice-president, Merchants Refrigerating Company, New York; Thomas Eckerson, president, Eckerson Company, Jersey City, N. J.; Frank Fischer, vice-president, Fischer Baking Company, Newark, N. J.; H. F. Eisinger, general manager, Ocha Company, Port Huron, Mich.; H. W. Bahrenburg, president, Mountain Ice Company, Hoboken; E. S. Martin, vice-president, Phenix Cheese Company, Edmeston, N. Y.; J. H. Mulliken, treasurer, Washburn-Crosby Company, Minneapolis, Minn., and Lorenzo Benedict, president, Worcester Salt Company, Ecorse, Mich.

Says Consumers Lack Understanding of Baking Powder

IN an address, which he has delivered before a number of chemistry classes in educational institutions, H. Wakefield, sales manager of the Ryzon baking powder department of the General Chemical Co., says that a careful investigation among a large number of consumers throughout the country has developed the fact that the average person buys baking powder as one would a can of corn, peas or tomatoes, feeling and believing that it is simply a can of elements, which mixed with other ingredients, in proper proportion, will produce a definite result.

"It is this fundamental lack of understanding generally," says Mr. Wakefield, "which has resulted in the general opinion that baking powder is baking powder; that it is all alike and will produce precisely similar results in the preparation of a batch of material. This deduction is not correct, as evidenced by the fact that large manufacturers of baked food and confectionery have proved and demonstrated beyond the shadow of a doubt that their formulas must be built around the particular leavening produce that they propose to use. In other words, these manufacturers do not leave anything to chance, as the average consumer does, in home baking. They build up a combination of ingredients in specified quantities, based on what the leavening material will do in combination with the other elements.

"The average home baker is very prone to attribute an unsatisfactory batch of baking to 'bad luck' or to some unknown cause, whereas there are only two outstanding factors that are essential to the success of baking in the home: First, to know that you have a given volume of leavening power in your baking powder used; second, that the heat units of your oven are exactly what they should be to produce a perfect finished product. There are, of course, other minor factors that may detract from perfect results in baking, but these two main factors will always produce a uniform and satisfactory result."

Foodstuffs Around the World

Dutch Losing Their Potato Flour Trade—Danes Eating American Canned Fruits For Breakfast—Germany Using Honey For Sugar

Dutch Losing Their Potato Flour Trade

The Netherlands seem to be losing their hold upon the potato flour and dextrine markets of the world. There has been a steady decrease in the exports of both since the peak of the trade in 1921, although the decrease has been less in value than in volume. Consul General George E. Anderson, Rotterdam, has informed the Department of Commerce that the total exports of potato flour for the first nine months of the current year were less than half as compared with the same period last year and about two-thirds of the 1920 export. One of the chief causes of this was the restricted buying in Germany. Holland's export of potatoes has also dropped very considerably, owing to good crops in the countries which usually took her surplus. Owing to the failure of the French grain crops, that country promises to be one of Holland's best potato customers this year and has already taken 43,128 metric tons to September 30, while during the same period last year it did not take a single tuber from the low country.

Danish Housewives Copying Hotel Menus

Used extensively in all the leading hotels of Denmark, American dried and canned fruits are slowly being adopted by the housewives of that country, Consul Thomson, Copenhagen, informs the Department of Commerce. These goods are served at the hotels under the name of "compote" with the breakfast coffee, and a fairly good market exists.

Using Honey Instead of Sugar

Scarcity and high cost of sugar in Germany has greatly increased the demand for honey. In spite of this, however, the domestic supply has decreased, says Consul Dumont, Frankfort-on-Main. In Hessen Nassau the total number of hives in 1921 amounted to 50,585. The best quality of strained honey from the vicinity of Cassel retails at Frankfort at 300 marks per pound, or about six and one-half cents. This is light-colored honey made chiefly from early flowers and tree blossoms. Another kind which is also greatly prized for its flavor is the darker colored "Heide" or heath honey.

Canned Grapes an Oriental Delicacy

Large quantities of American canned fruits and vegetables imported by the Indo-Chinese are threatened by a new regulation requiring all goods to be imported direct to Saigon without transshipment in order to benefit by minimum tariff rates. As there is not one American steamship line going direct to Indo-China, American goods are likely to be superseded by Australian and European products. Curiously, the most popular kind of canned fruit imported into that region is a canned, white grape, which is consumed in great quantities by the natives, says Consul Smith, Saigon, in a report to the Department of Commerce. Fresh apples from China restrict the consumption of the canned article, but canned pears are very popular. Small fruit is generally imported in jam form.

Large Walnut Production

The biggest walnut production on record is likely to be exceeded by this year's crops, according to information reaching the foodstuffs division of the Department of Commerce. Consul Theodore Jaeckel of Bordeaux, France, states that reports from all the French producing regions indicate that the production will be the biggest in years and that the average quality is good. Similar reports of unusually big crops come from other producing countries, such as Rumania, Manchuria, etc.; California, it is said, will furnish more than sixty million pounds of walnuts this year, a figure which, it is believed, has never been approached in that State before. In France, important quantities of the 1921 crop remain on hand, although some 630,000 pounds of the shelled nuts were shipped to the United States during September. It is believed that the stocks of old walnuts will have no appreciable effect on the market since it will be impossible to mix them successfully.

New Fruit Preserving Industry for Annapolis Valley

Fruits now going to waste throughout the Annapolis Valley of Nova Scotia will soon be manufactured into dried products, jellies, etc., by a syndicate to be incorporated under the laws of Nova Scotia. According to Consul General Gunsaulis, Halifax, a chain of evaporators in the Annapolis Valley is to be taken over by the new company. It is stated that the evaporating plant at Berwick will become one of the company's most important centers and is expected to provide employment for between five and seven hundred hands for ten months of the year, instead of only four months as at present. The new company will assume control of the plants in January.

Fijis, Refined and Cultured, Enter World Trade

A record of the triumphant march of civilization is contained in a report just received by the Department of Commerce from Vice Consul Moseley of Sydney on the commerce and industries of the Fiji Islands. Instead of commerce being carried on in war canoes and the industries consisting principally of head hunting, we learn through Mr. Mosely that a sugar industry has been developed to a high degree of perfection. In fact, since Britain planted her flag on Fiji, sugar has become the primary industry of the islands — over $15,000,000 worth having been exported in 1920. And monkeys are no longer hurling coconuts from the tree tops at dusky natives, for coconut growing has been reduced to a science and the groves are carefully cultivated and protected. Fiji has built up a most important banana export trade, and a coconut oil factory and paper pulp mills are among the recently established enterprises. Being fairly free from pests and diseases, and native grass growing in abundance, it is believed that the cattle business will shortly show an enormous increase. Probably Fiji's greatest undeveloped resource is an industry to produce alcohol from vegetable products—the islands offering great sources of the necessary raw material.

Holland's Butter Business in Australia's Hands

Australia has the butter business of Holland in the hollow of her hand, according to statistics furnished the Department of Commerce by Attache Howard W. Adams at the Hague. From January 1 to October 7, 1922, Australia shipped 4,149,443 kilograms of butter into Holland out of a total import of 4,494,901 kilos. The greater part of the remainder was supplied by South Africa, and New Zealand. The United States tied with Canada for last place, each nation sending 34 kilograms to Holland.

1923 British Food Expositions Interest Trade

The international fisheries expositions will be held at Leeds next year from September 24 to October 6, the American consulate general at London informs the Department of Commerce. The Manchester chocolate and sweets exhibition will be held at Manchester from February 13 to 22, while the grocers' show will be held at the same place April 17 to 26. The exposition of the Birmingham grocers is scheduled to begin January 24 at Bingley Hall, while the Newcastle-on-Tyne grocers hold their exposition at Newcastle in November.

Canneries May Save South Africa's Cattle Industry

South Africa's biggest problem—surplus cattle—may be solved by efforts now being made to establish meat-canning and meat products factories in Durban and other South African cities in the grazing belt, says Consul Lewis V. Boyle, Durban, in a report to the canned foods unit of the Department of Commerce. Those promoting the scheme are confident that they can put on the market goods identical with the imported American and Australian products for at least 20 per cent less.

D. E. I. Government Aids Sugar Development

Increased sugar production is assured the Dutch East Indies by an agreement just entered into between the Government and the Anglo-Dutch Estates Agencies, Ltd., Soerabaya, Java, for the irrigation of about 19,000 acres of land in Middle Java. The land is to be used for the cultivation of sugar cane and it is reported that the Anglo-Dutch Estates Agencies will establish one or more sugar mills as the land becomes available. The irrigation project will involve the construction of a dam and irrigation canals, and will be carried out under Government supervision.

Austrians Like American Honey

A good market in Austria awaits American exporters of honey, says Consul Foster, Vienna. The preferred varieties are dark-colored strained honey of acacia and linden flavors, packed in glass jars containing about one quart, one pint or one-half pint. The Austrian Republic cannot produce enough to supply its need. From July 1 the retail price of honey rose from 18 cents per kilogram to 54 cents per kilogram on September 30.

More Brazil Nuts

Brazil nuts may be as popular and as widely used in a few years as the lowly peanut. During 1922 more than 15,000 tons of Brazil nuts were harvested, says Consul Pickerell, Para, and prices reached a low figure, but nevertheless they paid. Owing to the big money in rubber, the natives have concentrated on supplying that commodity and have neglected the nut, but now the owners are really cleaning up their forests and making an effort to facilitate a greatly increased harvesting of Brazil nuts. Hitherto only a very small percentage of the crop has been gathered and then only from those trees that grow close to the river's edge.

Liebig Looking into Kenya Meat Possibilities

Representatives of Liebig's, Ltd., a British firm making extract of beef, with vast estates in South Africa, are visiting the newly acquired British colony of Kenya and making a tour of some of the chief cattle districts. The visit is arousing great interest throughout the colony, since it may possibly lead to the establishment of this firm in Kenya, an event which would give great impetus to the cattle industry. According to Consul Jenkins, Nairobi, an epidemic of rinderpest is now prevalent in a large part of the area devoted to cattle raising. Kenya is well suited for the development of a meat extract industry, except that more effective safeguards against diseases must be provided than exist at present before this industry can assume large proportions.

Britain Taking Blue Ribbon Apples

Nova Scotia apples, winning first honors at the Imperial Fruit Show apple exhibit in London recently, are being shipped to the United Kingdom in record-breaking quantities, according to a report from Consul General Gunsaulus, Halifax. To the end of September, 125,000 barrels went through Halifax alone. Last season the failure of the apple crop in this country provided a good market for these Canadian apples. With a crop in Nova Scotia this year of about 1,628,000 barrels and a good crop in Western Canada and the United States the Nova Scotia exporter has only the United Kingdom to supply.

Japanese Have Their Eyes on Argentine Ranches

The huge cattle ranges and the annual surplus of cattle and meat products of Uruguay and Argentina are the arguments which are likely to swing the decision of Japanese interests to establish closer commercial relations with those South American countries, according to a published interview with Takashi Nakamura, Minister from Japan to Argentine and Uruguay, just received at the Department of Commerce from Vice Consul Edward B. Montgomery, Montevideo. "Japan needs a large quantity of foodstuffs to feed its people," said the Ambassador, "for the development of its industries and its population. In consequence, the products of the cattle industry actively interest our country. Today in Japan, South America is in the limelight, and they wish to buy here. With this object, taking advantage of the Brazilian Exposition, a large commission of high representatives of Japan industry will go to Montevideo and Argentina looking for the basis of an intensive and permanent commercial interchange, and studying in detail all the productive capacity of these rich markets."

Dane Butter Makers Eat Margarin

Denmark one of the most important butter producing countries in the world, is curiously enough also the home of a great vegetable margarin industry producing in 1921 over 61,400 tons, says Assistant Trade Commissioner Sorensen, Copenhagen. The explanation of this paradox is probably the excellence of quality of both products. In case of butter, the very high quality tends to make the price so great as to be prohibitive as far as the average Danish consumer is concerned, while the excellent quality of the margarin produced by the home industry offers an easy means of escape from paying the exorbitant price that the Danish butter brings all over the world. The margarin industry has grown up chiefly as a supplier of the domestic market as only very little margarin is exported. However, an entire Danish margarin manufacturing plant has recently been moved bodily to Riga, Latvia, from which it is proposed to supply the Baltic and Russian markets.

European Foods Production Lags Far Behind

Europe in general is about 15 per cent behind her normal production of foodstuffs, says E. G. Montgomery, Chief of the Foodstuffs Division of the Department of Commerce, in an analysis of the European food situation.

Before the war European production of foodstuffs was about 95 per cent of her wants, while in the matter of clothing material such as wool, cotton, etc., she was on 30 per cent self-supporting basis, according to Mr. Montgomery. "The war," he said, "brought profound changes." A shift from a state of what might be called over nourishment to under nourishment took place. Food habits were materially affected and the consumption of high grade food stuffs such as meat, wheat, etc., gave way to a liberal substitution of cheaper foods.

Production during this period fell off between 30 and 40 per cent with corresponding decrease in consumption. Gradually Europe is working toward better conditions. A partial recovery, roughly about 15 per cent over the war period, is apparent when all commodities are considered. In general, Western and Central Europe are now on an 85 per cent consumption basis.

The recovery varies with different commodities. The consumption of wheat and rye is almost back to pre-war normal amounting to, viz., 92 per cent. The consumption of coarse grain is still about 74 per cent; potatoes 70 per cent; sugar about normal; and cotton 61 per cent. Also the caloric consumption of foodstuffs in the manufacture of alcoholic beverage is much lower than in pre-war years.

"While this decrease in production and consumption was going on in Europe, there was a corresponding increase in production outside of Europe. However, this increase took place principally in North America, as there was no great change either in South America or Australasia, the two other great surplus producing regions. During this period, also, Russia, which before the war furnished Western and Central Europe with almost half of their grain imports, was completely eliminated as a surplus country. The whole Russian trade has been shifted largely to North America and is now being supplied by the United States and Canada.

"If it had not been for the elimination of Russia as a surplus country, it would have been practically impossible to have marketed more than a small percentage of the North American surplus in the four years since the close of the war.

"It is interesting to note that neither South America nor Australia made any great increase in production; in part due to the fact that they were limited in shipping during the latter part of the war and consequently prices of agricultural products did not have the great rise that they did in the United States and Canada, since these countries, due to their nearness to Europe, were in a position to supply and did supply most of the products."

National Dairy Association President Re-elected

The National Dairy Association elected Professor H. E. Van Norman president for the eleventh successive time at a meeting held in Chicago, December 8. The National Dairy Association is the organization which conducts the annual National Dairy Exposition. Mr. Van Norman was also re-elected a director of the National Dairy Council, which has been engaged for several years in conducting educational campaigns in behalf of milk drinking. Both organizations have their headquarters at 910 South Michigan Avenue. Besides heading the National Dairy Association, Mr. Van Norman is president of the World's Dairy Congress Association, which will hold an international dairy meeting in the United States in October, 1923. President Harding has invited 150 nations, colonies and commonwealths to send official representatives. It is expected that the Exposition and the Congress will be held in the same city on successive weeks. The city at which the meetings will be held has not yet been announced. The World's Dairy Congress Association has its headquarters at the Star Building, Washington, D. C.

Before taking up the Congress work, Mr. Van Norman was Dean and Professor of Dairy Management at the farm school of the University of California, at Davis, Calif. At the suggestion of the Department of Agriculture, which had fostered the Congress movement, the University gave Mr. Van Norman a leave of absence in July, 1921, in order to give him freedom to arrange for the international meeting. The Dairy Congress will be the first meeting of its sort to be held in the United States.

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Milk at its Best

Association and Convention Calendar

American Association Creamery Butter Manufacturers, Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Association, 1135 Fullerton avenue, Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N. W., Washington, D. C. Secretary, Charles L. Parsons.

American Corn Millers' Federation, 332 South La Salle street, Chicago. Secretary, T. M. Chivington.

American Dietetic Association, Washington, D. C. Secretary, Breta Luther, Children's Hospital, Boston, Mass.

American Macaroni Manufacturers' Association, 26 Front street, Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Association of Products from Corn, 208 South La Salle street, Chicago. Annual meeting early in the year. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Association, 53 Park place, New York. Secretary, H. F. Thunhorst.

Association of Operative Millers, Postal Telegraph Building, Kansas City, Mo. Next convention, June 4 to 9, 1923. Secretary, M. F. Dillon.

Biscuit and Cracker Manufacturers' Association of America, 90 West Broadway, New York. Convention, May, 1923. Secretary, R. T. Stokes.

Flavoring Extract Manufacturers' Association of the United States. Date of next convention to be set in January. Secretary, Gordon M, Day, Day-Bergwall Co., Milwaukee, Wis.

Institute of American Meat Packers, 509 South Wabash avenue, Chicago. Secretary, W. W. Woods.

National Coffee Roasters Association, 64 Water street, New York. Manager, Felix Coste.

National Association of Ice Cream Manufacturers, 155 North Clark street, Chicago. Secretary, N. Lowenstein.

National Association of Retail Grocers, 416 R. A. Long Building,, Kansas City, Mo. Next annual convention at St. Paul, Minn., June 23 to 28, 1923. Secretary, H. C. Balsiger.

National Canners' Association, 1739 H street, N. W., Washington, D. C. Next convention at Atlantic City, N. J., the week of January 22, 1923. Secretary, Frank E. Gorrell.

National Confectioners' Association, 11 West Washington street, Chicago. Convention at Atlantic City, May 23, 24 and 25, 1923. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan avenue, Chicago, Ill. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana avenue, Washington, D. C. Secretary, A. M. Loomis.

National Food Brokers Association, 326 West Madison street, Chicago. Convention to be held simultaneously with conventions of National Canners' Association and the Canning Machinery and Supplies Association, at Atlantic City, N. J., the week of January 22, 1923. Secretary, Paul Fishback.

National Macaroni Manufacturers' Association, Braidwood, Ill. Next meeting, June, 1923. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I street, N. W., Washington, D. C. Secretary, Charles W. Holman.

National Paper Box Manufacturers' Association, 112 North Broad street, Philadelphia. Annual convention, May 9 to 11, 1923, Claypool Hotel, Indianapolis, Ind. Secretary, William W. Baird.

National Pickle Packers' Association, 326 West Madison street, Chicago. Meets with National Canners' Association at Atlantic City, January 22, 1923. Secretary, F. A. Vickers.

Rice Millers' Association, 609 Maison Blanche Annex, New Orleans, La. Convention, May, 31, 1923. Secretary, F. B. Wise.

Per Capita Consumption of Meat in the U. S. Steadily Increasing

FOR the past seven years the total consumption of meat and the per capita consumption of meat has shown an upward trend. It is estimated by the Foodstuffs Division of the Department of Commerce, on the basis of eight months' returns, that this year per capita consumption will slightly exceed 150 pounds.

The trend of meat consumption for the past 12 years emphasizes in a rather striking way the relation of meat consumption to the economic buying power of the people. In the period from 1911 to 1915 there appears to have been in the United States a steady decline in meat consumption per capita showed a pounds per capita. In 1916, however, the meat consumpeion per capita showed a marked increase to 145½ pounds. This was probably due to the fact that by that time wages had increased and people were able to buy larger quantities of meat.

The general meat consumption trend for the last seven years has been upward, with the exception of the year 1917 when there was a marked decline which reached the lowest per capita consumption level so far recorded in this country. There was a very rapid rise in the prices of meat during that year, which increased approximately 80 per cent toward the middle of the year. While wages also increased rapidly, it is probable that this perpendicular rise in price was the main factor in reducing meat consumption in 1917 to 131.8 pounds.

In the following year, there was considerable more propaganda in favor of an intensive saving of meat due to the great need of the allied armies engaged in the World War, but in spite of economy, in 1918 meat consumption had increased to about 15 pounds per capita over 1917, probably due to the fact that all labor was employed at high wages. While meat consumption in certain classes was undoubtedly reduced, a much larger class increased its meat consumption. The continued inflated wage scale and general higher standard of living has had the effect of continuing and increasing the use of meat as a food product up to the present time.

Complete data for consumption of meat during 1922 are not available at this time, but in the first eight months there was higher consumption than last year, and assuming this increase proportionally continued during the remainder of the year, an estimate has been made which indicates that meat consumption was 151.2 pounds per capita in 1922.

Eddy Paper Corporation takes over Old Company

The Eddy Paper Company, Chicago, under recently completed plans of reorganization, will be taken over by the Eddy Paper Corporation, an Illinois corporation. The Eddy Paper Company, one of the largest paper package manufacturers in the country, is a Michigan corporation and operates plants at Three Rivers and White Pigeon, Michigan. The Eddy Paper Corporation, which will take over the assets, business and good will of the old company, has an authorized capital of $350,000 of 7 per cent cumulative preferred stock and 125,000 shares of no par value common stock. Officers of the corporation are: Charles W. Folds, Hathaway, Smith, Folds & Company, Chicago, chairman of the board; George M. Seaman, president, Seaman Paper Company, Chicago, president; H. L. Street, Street, Chatfield Lumber Co., Chicago, vice president; George T. Wolf, president, First State Savings Bank, Three Rivers, Mich., treasurer; and William Edwards, secretary.

British Food Imports Back to Pre-War Basis

Figures on the British net imports of foodstuffs for consumption, for the first nine months of 1922, show that in wheat and flour—in terms of wheat, Great Britain is practically back to its pre-war consumption of 1910-1914, while the takings of coarse grains show a considerable decrease. The home production of wheat in Great Britain, which constitutes about one-fourth of the total consumption, was a little larger in 1921 than in pre-war years. The production of oats and barley have not increased and the total takings of coarse grains, which are now considerably below pre-war figures, would indicate that Great Britain is not importing as much of this material for stock feed, brewing, and distilling.

The statistics of rice imports would indicate an enormous decrease from those of last year, believed to be due to the fact that there was a large carry over of this product from the preceding year.

It is noticeable that practically all animal products, including meat, dairy products, and fats, show increased imports over the pre-war figures. No data are at hand to account for this, unless it may be that home production has decreased. It is reported that the very dry season of 1921 in Great Britain had a marked effect in decreasing the production of meat and dairy products. The principal increase in dairy products is in cheese and condensed milk, both of which may be regarded as meat substitutes, and no doubt the increased demand for these food products is due to the same causes that have affected the meat consumption.

The British imports of these products show a remarkable increase which is very encouraging, as these foods are somewhat in the class of food luxuries and their increased consumption indicates a higher standard of living. The imports of lard and vegetable fats show a marked increase, while margarin imports decreased.

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Wholesale Meat Prices Close to 1913 Levels, Says Charles E. Herrick

The wholesale prices of beef, pork, and veal have become virtually stable at levels close to those which prevailed in 1913, according to Charles E. Herrick, president of the Institute of American Meat Packers, in a statement issued reviewing the meat trade during the year just closed. Two other important elements in the present situation, Mr. Herrick said, are that domestic consumption of meat per capita in 1922 shows an increase and that the British pork market, an important export outlet, shows a recent and present slump in values.

"Although prices continue to move up and down," said Mr. Herrick, "fluctuating with supply and demand, the price range is not nearly so wide or so violent as it was two years ago or even during the last year."

In commenting on the present relatively low prices of meats, Mr. Herrick pointed out that, in the case of fresh pork cuts, light pork loins were selling at wholesale at Chicago during the week of December 16 only two cents a pound higher than during the same week in 1913; fresh hams, four cents a pound higher, and leaf lard, spare ribs, and skinned pork shoulders, only one cent higher.

"During this same week," continued Mr. Herrick, "carcass beef prices were only slightly higher, on an average, than during the same week in 1913. Prime beef was about four and one-half cents a pound higher; medium beef was exactly the same, and beef from cows was three cents a pound lower. Carcass veal from a good grade of calves was selling about five cents a pound lower than in 1913.

"Although these examples do not take in all of the cuts of the various meat animals, I believe that they are typical and thoroughly representative of the present market. As a rule, such cuts as loins, ribs, and fancy hams and breakfast bacon are somewhat higher now than in 1913, but many other less known cuts are lower the average of the whole being but slightly higher than in 1913."

"Operating expenses are very considerably higher than they were before the war.

"The stabilization of the wholesale prices of meat and by-products naturally has been beneficial to the industry, although it still is difficult enough to sell the finished products at a price covering the cost of livestock plus expenses and a modest profit. This difficulty is aggravated, in the case of pork and hogs, by the slump in the British market.

"Moreover, the rate of meat consumption, which has been declining somewhat during the last decade or two, now seems to be increasing.

"Production, as represented by the slaughter of animals under Federal Inspection, has been noticeably greater than in 1913 and also than in 1920 and 1921.

"The fact that storage stocks are relatively light at this time and have been for the last several months is indication that the large volume of production was moved into consumptive channels.

"The export trade held up fairly well, on the whole, until the last of the year. The European countries, which represent our principal foreign markets so far as meats are concerned, purchased American meat products in relatively large amounts, despite the fluctuations of exchange and the lack of money. . The tonnage of meat products exported during the year just closed exceeded that of 1913 by more than 30 per cent. The value per pound of meat exported was only about two cents higher than in 1913—another convincing indication of the fact that wholesale meat prices, abroad as well as at home, are practically at pre-war levels. The fact should not be disguised, however, that the present slump in the British pork market is a serious factor and a depressing influence."

F. E. White Now Heads Armour Concerns

J. Ogden Armour Becomes Chairman of Board

J. Ogden Armour, who for twenty-one years has been head of the big packing concern founded by his father, has retired from the presidency of the original corporation, Armour & Co. of Illinois and the new subsidiary corporation, Armour & Co. of Delaware, and is succeeded in both positions by F. Edison White, who has been a vice president eight years, after rising from the ranks of employees. Mr. Armour became chairman of the board of directors in both companies. One of his nephews, Philip D. Armour, 3d, becomes first vice president of these corporations.

Announcement of the change, which is one step in the proposed arrangement whereby the Armour interests take over the business of Morris & Co., another of the "big five" in the packing industry, was made by Mr. White after a meeting of the Armour directors.

Mr. White said that the officials of Armour & Co. were busy over its affairs and he indicated that it would be several days at least before any formal announcement concerning the proposed merger with the Morris company would be made.

If the proposed purchase of Morris & Co. by the Armours is consummated, F. Edison White will be the head of the greatest packing industry ever created.

The new president's history is that of a man who started in the slime of "Packingtown" and climbed to the top of the ladder. Mr. White, who is 49 years old, received a public school education at Peoria, his native city. At the age of 17 he went to work on the killing floor of a Peoria packing house. Five years later he went to Chicago to work for Armour & Co. as an inspector in the car route department. A year later he organized and became first manager of the sheep department. Within ten years Mr. White was assistant to Arthur Meeker, a vice president of the company. In January, 1912, he became a director and two years later he was made a vice president.

The passing of J. Ogden Armour from active control of the company ends a period of more than thirty-five years devoted to development of the industry. Mr. Armour gave up his last year at Yale to enter the packing plant and learn every detail of the business he was destined to control. After a year of apprenticeship he assumed the executive responsibilities of the industry and managed it fourteen years until on the death of his father in 1901 he assumed complete control.

In recent years he had shifted much of his burden to other shoulders, including those of his nephews, Philip D. Armour, 3d, and Lester Armour. The former has been a vice president for several years and the latter is a director.

Exchange of Food Products With Other Nations

Announcement that a big consignment of butter from the other side of the globe is now crossing the Pacific from New Zealand to New York, calls attention to the increasing detail in which the common products of the various sections of the world are now being interchanged. While we have been congratulating the American cow upon the fact that she has since the beginning of the war supplied a half billion dollars' worth of her products for the foreign trade, we now find that the cows of other parts of the globe are quietly invading our own markets by unaccustomed routes and that they have sent us 120 million dollars' worth of their products while we were sending 500 million dollars' worth of our own dairy products to other markets, especially those of Europe.

We sent 150 million dollars' worth of butter, cheese, condensed milk and other dairy products out of the country in 1919, and in the following year, 1920, Australia, New Zealand, Argentina, Brazil, Colombia, Mexico, Canada and certain European countries sent us 30 million dollars worth of the products of their dairy industries. And the reports of big shipments now on the way from the dairy farms of New Zealand indicate that the great dairy industry of that country does not find even the equator and the long trip across the Pacific a bar to a permanent movement of their products to our markets, despite the fact that the outturn of our butter, cheese, and condensed milk factories aggregated over a billion dollars value in the last census year, 1919, while the details of that census shows that we produced in 1919 6,894,000,000 gallons of milk, 1,628,000,000 pounds of butter, and 480,000,000 pounds of cheese. A little more than one-half of the butter produced in the United States is the product of the factories and the remainder from the farms, while of the cheese products of the country about nine-tenths are of factory production.

Peanuts are another example of the free interchange of articles considered of minor importance. The United States produces from 35,000,000 to 50,000,000 bushels a year, yet our importation of peanuts in the past decade has amounted to 27 million dollars value, and of peanut oil 54 million dollars, while our exports of peanuts in the same period were nearly 10 million dollars though of peanut oil the quantity exported was comparatively small.

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Recent Patents

The following patents of interest to readers of The American Food Journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,432,747. Apparatus for automatically righting loaves of bread. Gustav B. Eggert, Saginaw, Mich., assignor to Baker-Perkins Mfg. Corporation, same place.

1,432,874. Dough-molding machine. Frank X. Lauterbur, Sidney, Ohio.

1,432,919. Butter-handling machine. Richard F. Stewart, Briarcliff Manor, N. Y.

1,433,503. Fig product. Jesse C. Forkner, Fresno, Cal.

1,433,523. Pulping-machine. Leland A. Babcock, Chicago, assignor to Sprague Canning Machinery Company, same place.

1,433,724. Pulping-machine. Author E. Hughes, Hoopeston, Ill., assignor to Sprague Canning Machinery Co., Chicago.

1,433,959. Chocolate-beater. William C. Le Petrie, Montreal, Quebec.

1,434,035. Apparatus for baking. Arthur H. Ballard, Boston, assignor to Ballard Oven Corporation, same place.

1,434,036. Apparatus for baking. Arthur H. Ballard, Boston, assignor to Ballard Oven Corporation, same place.

1,434,048. Butter substitute and process of making same. Charles and Henry H. Deering, Chicago.

1,434,049. Method of and apparatus for manufacturing butter substitutes. Charles and Henry H. Doering, Chicago.

1,434,070. Frozen food product. William B. Smith, Washington, D. C.

1,434,094. Process of making a milk product. John M. Colony, Newton, Mass.

1,434,297. Process for the manufacture of coffee substitutes from cereals and the malt of cereals. Karl Lendrich, Hamburg, Germany.

1,434,343. Cheese-press. Zygmunt Jaruga, Amsterdam, Ohio.

1,434,396. Cheese-mold. Julius R. Meyers, Glencoe, Ill.

1,434,409. Dough-cutting machine. Anthony Roscoe, Brooklyn.

1,434,462. Yeast and process of making the same. Theodore R. Wagner, Brooklyn.

1,434,498. Food product. Carl S. Miner, Chicago, assignor to Quaker Oats Company, same place.

1,434,617. Portable dough-mixer. Frank X. Lauterbur, Sidney, Ohio.

1,434,618. Flour weighing, blending, elevating, and sifting machine. Frank X. Lauterbur, Sidney, Ohio.

1,434,663. Method of packing pimentoes. Charles Ortega, San Diego, Cal.

1,434,667. Malted-milk confection. Livingston A. Thompson, Waukesha, Wis.

1,434,771. Device for testing preserved foods. Oreste Carrasco, St. Giovanni di Teduccio, Italy.

1,434,815. Method and apparatus for blanching whole peanuts. Richard A. Greene, Brooklyn, assignor to Jabez Burns & Sons.

1,434,816. Nut-blancher. Richard A. Greene, Brooklyn, assignor to Jabez Burns & Sons.

1,434,837. Process of treating dried figs. Ellsberry Newby, Fresno, Cal.

1,435,295. Heating and cooling device for treating milk. Soren P. Hay, Seattle, Wash.

1,435,794. Cooked cereal food and process of preparing the same. George Beek, Detroit, Mich., assignor to American Hominy Company, Indianapolis, Ind.

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SAN FRANCISCO

1922 Canned Corn Pack Smaller than Normal

The production of canned corn in the United States for the season just closed according to data compiled by the National Canners' Association and furnished to the Foodstuffs Division, Department of Commerce, amounts to 11,419 000 cases, of 24 No. 2 cans to a case. These figures represent a smaller pack than normal and following the very small pack of 1921, should result in a firm market for canned corn.

Although Iowa led with nearly 2,000,000 cases this year, she fell far short of her usual pack and Illinois is 300,000 cases short of her twelve-year average. Maryland's "statistics" improved considerably, although she put up less corn than any year during or since the war, except for abnormal 1921. The following annual official statistics of the National Canners' Association are based upon the circularization of every canner of corn in the United States.

	1920	1921	1922
Iowa	3,246 000	1,190,000	1,959,000
Illinois	2,271,000	1,711,000	1,939,000
Maine	1,588,000	911,000	1,066,000
Ohio	1,544,000	850,000	1,073,000
Maryland ..	2,217,000	1,130,000	1,944,000
New York..	829,000	564,000	616,000
Wisconsin ..	590,000	576,000	625,000
Indiana	861,000	709,000	665,000
Minnesota ..	643,000	573 000	598,000
Missouri......			
Michigan......			
Delaware ..	764,000	440,000	701,000
Vermont........			
Pennsylvania....			
All other states	487,000	189,000	233,000
Total ...	15,040,000	8,843,000	11,419,000

Canned corn has never been an important item in the export trade of this country, and, as a matter of fact, but few canners or exporters have ever made any very determined attempts to place it abroad. With the proper kind of foreign merchandising, backed up by the canners of this country, canned corn should become an acceptable item of food in many foreign countries.

Canada Utilizing Its Apple Waste Products

Canada is steadily developing a substantial industry in the utilization of its apple waste and its early and windfall apples in the manufacture of by-products. Today practically all these apples and waste are used in some form or other in the manufacture of some marketable product, such as jams, jellies and analagous commodities of which the apple industry supplies the basic material, and further plans are being made to extend this industry.

Apple waste, which includes cores, peelings, chop and pomace, prior to the great war was shipped from Canada to England, France, Holland and Germany, where it was manufactured into various products, subsequently exported to the world's markets. The war and the adverse rate of exchange, together with the increased cost of transportation, forced the apple growers to seek other markets, which in post-war years have been found in Quebec, Ontario and New York State.

The manufacture of cider and vinegar from Annapolis Valley apples has been done for some years past, on a comparatively large scale, at Bridgetown and Canning, Nova Scotia, and lately a new plant has been erected at Aylesford, in the very heart of the apple district, according to the Canadian Pacific Railway. The brands of both cider and vinegar from these plants have been long known to the trade, and have enjoyed more than a Dominion-wide reputation.

Concentrated cider is another product of recent origin. It was first manufactured in 1920. In 1921, the quantity was largely increased. Where prohibition has compelled the use of milder brands of liquids, concentrated cider has found a ready market, and several of the Canadian Provinces have given it a sympathetic reception. It is put up in bulk in wood, and also for convenience in tins in cases.

The quantity of canned apples put up in the Annapalis Valley of the 1921 crop totaled, in round figures, over 80,000 cases of gallon apples. Cider and vinegar are figured in the hundreds of thousands of gallons and evaporated apples run over one million pounds.

"In 1921 a new method of extracting by-products from waste and otherwise useless apples, including the most intensely acid and worthless apples, which heretofore have been going to waste, was introduced in the valley," says a bulletin. "From a simple process it was claimed that a sirup, which was pronounced eminently desirable as a basis for other concoctions, was produced. Calcium malite, the same as is derived from maple sirup and known as sugar sand, was produced by this process.

"An excellent line of high-class confectionery has been manufactured and found a wide market in the Western Pacific apple districts of the United States, made from apple juice, of which large quantities could be obtained from unmarketable apples in the Annapolis Valley."

Retail Grocers Convention in St. Paul, June 23, 1923

The annual convention in 1923 has been set by the National Association of Retail Grocers, Kansas City, Mo., for June 25 to 28, in St. Paul, Minn. The convention program has been arranged to appeal to all food trade factors—wholesale as well as retail.

The executive board of the association at its recent semi-annual meeting in Washington, D. C., Nov. 13 to 15, besides arranging the convention date, adopted a resolution, urging affiliated organizations of the association to resist the efforts which are being made in practically all states by retail druggists' organizations and in effect in some states, to have laws enacted restricting or prohibiting the sale of household remedies and proprietary medicines in grocery stores. The sale of these articles in grocery and general stores in suburban and rural communities, the resolution points out, is a distinct necessity to the public.

In connection with the resolution, it was brought up at the meeting that the druggists, in metropolitan centers at least, are encroaching upon the field of the grocer by selling coffee, tea, spices, biscuits and crackers at low prices. The board recommended serious consideration of this situation and a thorough discussion at the St. Paul meeting next June.

Up to Manufacturer and Jobber to Help Retailer

"There are 350,000 retail grocery stores in the United States," says W. F. Jetter of the Franklin Sugar Refining Company, in a recent issue of the "American Sugar Bulletin." "These stores handle almost all of their food articles through the channels of the manufacturer and the wholesale grocers, who are primarily the distributors. Any change in price or in market conditions that affects the retailer likewise promptly has its reflex upon the wholesale grocer. At the present time competition is keen, especially so with the retail grocer.

"Suggest how they may be better merchants; keep their stores attractive and stocked with nationally known food articles, assuring them of a quick turnover, and by so doing increase their earning power on their merchandise investment. Point out to them the importance of fire insurance and a conservative credit system. Suggest the necessity of eliminating all unnecessary overhead costs. Suggest the importance of service and quality of merchandise. Discourage the retail grocer from loading his shelves with 'slow sellers.' Helping him to handle foods that will enable him to turn his money over the greatest number of times during the year.

"In these days of the convenient small container in which most food articles are packed and sold, the retailer does not have to overstock to be adequately supplied."

Mr. Jetter points out that private brands offered by jobbers are expensive to the jobber to maintain in comparison with brands of manufacturers who have nation-wide distribution, backed up with judicious advertising. In addition, he says nationally advertised brands sell more quickly and give better satisfaction as the trademark is the manufacturer's guarantee of quality, purity, sanitation and standardization. Should at any time a package of nationally advertised food products fail to come up to the standard of the manufacturer he will be only too glad to make proper and just amends, but this procedure is difficult if one handles "private brands" or bulk goods, which lose their identity when once released by the manufacturer.

"Therefore, may it not be fairly said that it is up to the manufacturer and the wholesale grocer to teach those advantages to the retail grocer that he may become a more potential customer for all time?" asks Mr. Jetter.

A More Convenient Package for Waxed Papers

In order to eliminate unrolling and rerolling of a package of waxed paper to obtain a single sheet, the Arthur R. Rapp Company, Chicago, is now putting out its wax lunch roll paper in envelope containers. This method of packaging permits the withdrawal of one or more sheets at a time without unrolling the large roll with a bulky cardboard core. The company believes that greater facility in using waxed paper may lead to its wider use for protecting meats, cut fruits and vegetables when placed in the refrigerator. The company also points out that the envelope container is a distinct saving in distribution, as it is more compact and permits a saving on freight charges, packing charges and storage space.

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The National Magazine of the Food Trades
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A New Experiment in Cooperation Between Manufacturer and Laboratory

Teachers College, Columbia University, Develops Research Department in Food Problems, Whose Facilities Are Offered to the Industry

By WALTER H. EDDY

Associate Professor of Physiological Chemistry and Chairman of the Committee in Charge of Practical Arts Research, Teachers College, Columbia University

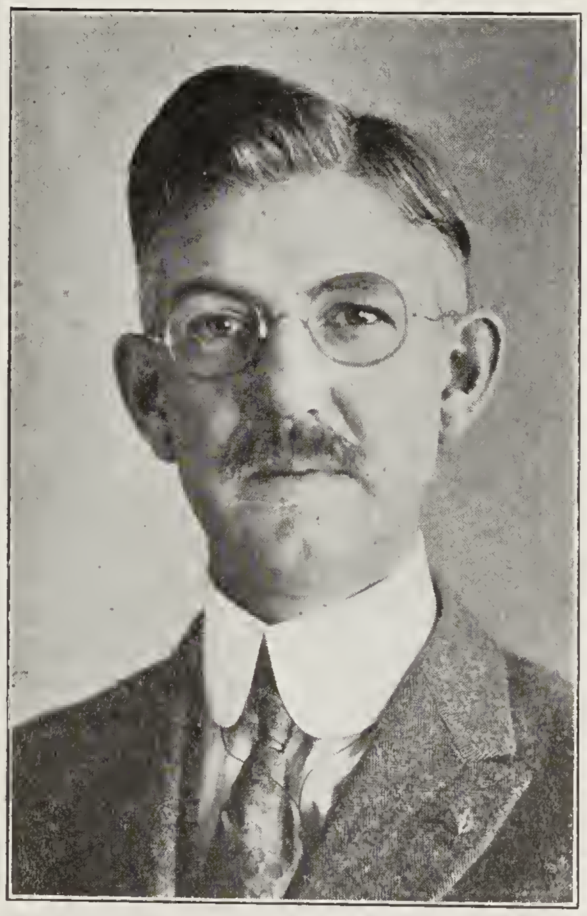
AS a manufacturer of food products how can you obtain unbiased judgment, recognized as such by the public, on the validity of an advertising claim?

What kind of vocational training do you believe brings fitness for the job?

How can a technician be trained to become a specialist in any particular field and at the same time prevented from becoming narrow and impractical?

How often have you said: "I wish I knew enough about the principles underlying the development of perfection in my product to enable me to make intelligent use of them in such development" or "I wish I knew some way to reach the public with a propaganda for reform that would enable me to give them better quality goods and not be accused of boosting the cost of living?"

If you have ever raised any of these questions in your mind, you will be interested in a development of a school for training that has recently been inaugurated and hopes to develop into a cooperative agency that will solve these and other questions to the satisfaction of the manufacturer, the public and the educator. It is my opportunity to outline briefly in this journal the nature of the practical arts research which during the past two years has been developing in the laboratories of Teachers College, Columbia University, under the joint auspices of the School of Practical Arts and the T. C. Institute of Research. Methods are always more easily grasped in terms of examples and before entering into any discussion of plans and ambitions let me cite a few examples of what is now being done.



Dr. Walter H. Eddy

Experiments in Vitamin C in Cabbage

In 1921 Dr. H. C. Sherman and his students developed a basal diet for guinea pigs which made it possible to accurately test the scurvy preventing powers of a foodstuff. The substance which cures or prevents scurvy and which is found in especial abundance in certain fruits and vegetables has been called for lack of a better name, vitamin C. Dr. Sherman's work gave a method of testing that possessed the merit of quantitative accuracy and provided a tool for further investigation into the nature of this vitamin.

In the same year the departments of biochemistry and cookery in Teachers College set a group of students to applying the Sherman-LaMer test to determine the relative destructive power of a new cooking implement known as the pressure cooker upon vitamin C in cabbage when compared with open kettle boiling, the usual domestic procedure. Without going into the details the experiment involved, first a study by the cookery students of the exact procedure necessary to produce with the cooker a cabbage of equal palatability and table excellence to that produced by boiling in the open kettle, and second, a transfer of the cooked material to the laboratory and its use there in guinea pig tests to establish its scurvy preventing powers. The end result was to show that in spite of the higher temperature used in the cooker the reduced time exposure to heat resulted in no greater vitamin destruction by the new implement than by the old but also that both methods produce a destruction sufficiently high to make it important to know how much one must eat of a cooked vegetable to provide his daily protective dose against scurvy. These studies attracted the interest of the commercial canners. Last November the director of the National Canners' Research Laboratory sent his personal representative to prepare for us a complete series of samples of commercially canned cabbage. This is now being used to determine the effect of the canning process on vitamin C destruction.

I might stop here and sermonise on what the conduct of this work in our laboratories has meant in training of students, contact with practical problems and the like but I will leave this to your imagination and give you another example to illustrate another angle of the work.

Seeking a Palatable Peanut Flour

When the cotton boll weevil came along and drove out the cotton, the land was in many instances planted to peanuts. As a result, the peanut crop of the country has increased remarkably in recent years. Aside from the use of the nuts themselves, the oil has been sufficiently valuable to make it pay to press the peanut for this commodity but no other use than as cattle food has been found for the press cake. The Bureau of Chemistry at Washington, on the lookout for means to improve the food supply of the nation and reduce its cost, set its chemists to work on the press cake. They soon brought out the fact that the cake is far too valuable a source of protein to waste on cattle food. Their researches showed that peanut flour made from the press cake is an ideal supplement to the protein of white wheat flour. These facts appeared in bulletins and scientific journals. But to "put over" a food product it is first necessary to make one that will taste good. If a thing tastes good it will almost sell itself and if in addition the good tasting product can be shown to have superior nutritive value the public and the advertiser can meet on common ground. This peanut problem seemed to offer an ideal vehicle for making the Teachers College laboratories function both as a servant to the public and an aid to the manufacturer. The presence in the school of both cooking and nutrition experts seemed a happy combination for this particular field of effort.

For two years now these experts have been combining forces to determine the proper blend of peanut and white flours that makes for a good working dough, palatability and nutritive excellence. One of the results is to find that too much peanut flour makes for toughness in the cooked product. Recipes have been worked out. Methods of preparation of the flour from the raw material have been studied from the viewpoint of flavor. Animal growth curves have been developed to prove nutritive claims.

Our only original contribution in this study has been the emphasis placed on palatability of product. We are merely supplementing a project originated by the Bureau of Chemistry and becoming a partner in a good cause. A prominent biscuit manufacturer has already been attracted by our work and is consulting us for advice in marketing a peanut-wheat combination. Our work is making it possible to help him or anyone else interested in the project and at the same time educationally to spread the idea before the public. Our students who have worked on this problem have gained a close contact with the problem of marketing an idea and an insight into the relation between the laboratory and a manufacturer who is trying to interest the public in a worth while novelty. We have had no problem in which this interdependence of one upon the other has been more clearly demonstrated.

How the Manufacturer Can Cooperate

Among the queries with which I appealed to your interest in my opening paragraph there are two that relate to what can be a special field of usefulness for the Teachers College laboratories. If you go to your directors and suggest that they establish an experimental laboratory to study the deficiencies of a particular product they may well hesitate over the outlay necessary to obtain adequate equipment and expert investigators. There are, however, many problems that demand solution and the best talent available to work upon them. Many of these problems are such as could best be handled by experts and laboratories already equipped in an educational institution. I want to cite one other example of our work that illustrates the way in which we believe a college laboratory can function and save both time and expense to the manufacturer.

It is a well known fact that bread made from white wheat flour lacks many of the elements that are essential to a complete diet. It is equally well known that rightly or wrongly a great many people prefer the taste of white bread to whole wheat bread. During the past year a prominent manufacturer of bakers' supplies approached us and asked if we would be willing to accept a grant of money to make a thorough study of commercial breads and their particular deficiencies. These investigations were to be made by us after any method we might devise, the results published when and where we wished but without use of the names of the particular breads studied, the whole study to be used to provide a guide to the baking trade as to what leads to deficiency in product, what can be done in general to improve quality, how far that can be done with natural foodstuffs, what is the particular influence of ingredients such as butter or oleo, what can be accomplished through greater use of milk, etc. At the same time such a publication from the college laboratory would provide a primer for the public on which the consumer could rely to base a sound judgment as to the baker's offerings.

The grantee of the fund for this research is not a baker. If he had any motive other than to help along a type of experimentation which he felt would be of service to both the baking trade and the public, it was only that in furthering the improvement of a staple article of diet and increasing the sales thereof he might indirectly benefit by increase in his own sales of bakers' necessities.

Our board agreed to accept the grant. Work has been in progress for a year to date. Publication of results will begin soon. The problem has been most interesting and has afforded us opportunity on our part to get in close touch with practical difficulties in bread production such as cost of materials, limitations of equipment, and the difference between practical and impractical suggestions. On the other hand the knowledge and laboratory technique which is ours, the interrelation of departments and opportunity for consultation have made it possible for us to classify defects and develop suggestions for improvement that will, we think, make our findings of real value to both bakers and public.

How the College Laboratory Functions

Are there not other fields where a manufacturer could well afford to turn over to such laboratories as ours his general problem? Are there not groups of manufacturers that while unwilling to go to the expense of conducting such investigations for themselves could well pool their funds for the common good? We see in such work a suitable function for an educational research institution. We could not and would not undertake to develop secret formulae for any manufacturer. That is the function of the consulting chemist. To do so would at once destroy public confidence in our findings and justly. But with our laboratories and our staffs of experts we are in a position to make a small grant go far toward the solution of many problems whose solution would unite manufacturer and public in their search for better products, would make for increased production and consumption and reduce the cost of educational advertising.

Just one more example to illustrate the advantage of the collegiate laboratory over a laboratory in a manufacturing plant. Like all institutions where the recent developments in nutritional science are closely followed we have been keenly interested in the discoveries which have demonstrated the close relationship between diets and tooth and bone formation. We have conducted our own studies in this field. As soon as our work was begun we were almost immediately offered the facilities of a large city hospital. With this aid we are enabled to extend our studies into a laboratory where their direct relation to human betterment can be noted. We can get this cooperation because our motives are unquestioned, we are working to advance human knowledge and what we learn will be promptly available to those who need it.

As a manufacturer have you a problem whose nature places it under any of the following heads:

1. Need for information which you are willing to share with other manufacturers in your field and which you believe will increase production and consumption.
2. Need for unbiased opinion based on experimentation conducted openly and subject to review which will show the validity or lack of validity in an advertising claim?

3. Need for comparative tests to establish standards for judging products whose establishment would involve costs which you do not feel justified in urging on the basis of direct profit to your firm but to which you would be willing to contribute for the good of the trade.

If so we believe that the Practical Arts Research Division of Teachers College can be of direct assistance to you and we invite cooperation.

All Departments of College Give Aid

I have given these examples to make concrete the nature of our work and to indicate our ambitions. The departments that make up the School of Practical Arts are all cooperating in this work. This includes the chemical, nutrition, cookery departments, etc. A committee on research composed of the heads of these departments examines all projects submitted, determines their feasibility and checks all publications. The recommendations of this committee are submitted to the director of the school who consults the administrative board of the Teachers College Institute of Research. Every means is taken to safeguard the school and to control the accuracy and nature of its published results.

From the viewpoint of Teachers College the research work is primarily a study in practical arts education. All experiments are under the personal direction of one or more heads of department. The actual experimentation is participated in by constantly changing groups of students acting under direction. This plan makes for continuity of study under competent leadership and at the same time it is possible to provide training for much larger groups than would be possible were the conduct limited to a single worker. The trustees of the college have established a fund for the purchase of special equipment and to pay technical assistants which may be needed when work would be delayed if dependent entirely upon student effort. To this fund may be added the resources of such grants as the board approves.

We welcome this opportunity to announce our plan to the food manufacturers through The American Food Journal and will welcome their suggestions and cooperation.

The American Food Journal is pleased to be the means of broadcasting to the food industry the news of the establishment of a special department in Practical Arts Research at Teachers College, Columbia University. Sufficient experimental work has been done to determine the value of this work to food manufacturers, who are urged by Dr. Eddy, in the accompanying article, to take full advantage of the University's facilities to develop information and unbiased opinion or to develop comparative tests to establish standards for judging food products.

The departments of chemistry, nutrition and cookery are working together in this effort to be of assistance to the food industry and to the public.—THE EDITOR.

Who's Who in the Bureau of Chemistry

Some of the Varied Activities of this Important Branch of U. S. Department of Agriculture

(Second article; first published in January issue)

PROBABLY the biggest single duty performed by the Bureau of Chemistry is in enforcing what is known as the "pure food" law, officially referred to as the Federal Food and Drugs Act. It operates as a protection to the public, an insurance of purity to the public, not only on foods but on patent medicines, crude drugs and pharmaceuticals, etc.

To facilitate the identification of crude drugs it is necessary to carry a large collection of authentic samples, comprising a great number of plant products from all parts of the world.

The Pharmacognosy Laboratory was established in 1914 for the purpose of supervising the control over crude drugs exercised by the field force under the Food and Drugs Act, and for the conduct of such pharmacognosy investigations as are required for the efficient enforcement of the law or are designed to prevent waste or improve the utilization of crude drugs products.

The number of trained pharmacognosists in this country is so limited that the bureau experienced no little diffifulty in securing some one to place in charge of the Pharmacognosy Laboratory. Pharmacognosy requires training in three highly specialized branches of science—chemistry, botany and pharmacy. Men who have mastered all three are rare indeed.

Dr. Viehover Heads Laboratory

Dr. Arno Viehover, pharmacognosist in charge of the Pharmacognosy Laboratory, received training in botany, chemistry and physics at the University of Munich, and later continued the study of these branches at the University of Marburg, taking in addition a complete course in bacteriology and pharmacognosy. His training has been thorough and the Bureau of Chemistry was indeed fortunate to secure the services of so able a scientist.

As head of the Pharmacognosy Laboratory Dr. Viehover considers appeals from the decisions of the field force in the case of crude drug importations and makes appropriate recommendations to the administrative officers.

The investigations conducted in this laboratory include studies upon calocarpum, mammosum, brassica, and beans of the lima type. The studies upon brassicas have made possible their classification into products suitable and unsuitable for mustard, so that the range of seeds adapted to condimental purposes has been extended. A simplification of the method for the determination of their volatile oils has been introduced. Methods for the differentiation of tropical beans of the lima type from ordinary navy beans have been described and the range of the amount of hydrocyanic acid occurring in lima type beans determined.

In addition to his duties in the bureau Dr. Viehover holds the offices of secretary of the scientific section of the American Pharmaceutical Association and referee on medicinal plants of the Association of Official Agricultural Chemists. He has been a contributor to the columns of The American Food Journal.

Work of Oil and Fat Laboratory

Prior to 1918, the Oil, Fat, and Wax Laboratory conducted investigations upon the improvement of the methods used by oil analysts upon the composition of oils, fats and waxes, and upon the technological problems important to the oil and fat producing industry. It also cooperated with the Bureau of Plant Industry and the Bureau of Markets in determining the variations in quality and quantity of the oil obtainable from a number of oil seed crops dependent upon the variety of the plant grown and the locality. Such studies were made especially in the case of the soy bean and the peanut.

In 1918 it was determined to undertake the systematic research necessary to supply information of fundamental importance to the oil-producing and oil-consuming industries, especially to hydrogenators of oils and to soap makers.

Dr. George S. Jamieson, at that time a research analytical chemist in the bureau, was placed in charge of the laboratory and the proposed investigations. Dr. Jamieson was peculiarly fitted for this particular work, having done work as a consulting chemist along the lines of mineral and water analysis, toxicology, ore analysis, analysis of alloys and steel, etc. He received his bachelor of philosophy degree from Yale in 1901 and his Ph.D. from the same university in 1904, having been employed during the interim as assistant in chemistry at that institution. From 1904 to 1909 he was an instructor, and from 1909 to 1917 an assistant professor. In 1917 he entered the Bureau of Chemistry.

Among the plants and oils studied during the progress of this research were cottonseed, peanut, tomato seed, okra seed, Hubbard squash seed, and cantaloupe seed oils. In the course of this work a small amount of myristic acid was detected in cottonseed oil, and the presence in this oil of both stearic and arachidic acid definitely proved. Moreover, an extensive investigation of the influence of the locality of production of the seed upon the composition of the oil obtained from it was made.

The work accomplished by this laboratory has been of the best. Not alone has Dr. Jamieson done the regular research work, but in addition has devised methods for the examination of many products, some of which methods have become standard and are now in general use.

The major researches are determining the composition of the important vegetable oils, which is of special interest and value to the vegetable industry as well as all the other investigations which are made in this laboratory.

In cooperation with the American Oil Chemists' Society, representing the vegetable oil industry of the United States, investigational work is being done in order to determine the physical and chemical characteristics of the principal commercial vegetable oils produced from the oil seeds grown in the various important regions. This work was specially requested by the chemists of the industry because there were no reliable data of this character on record.

Dr. Jamieson plans to cooperate with the oil industry further than heretofore and work on fundamental or basic problems, which, if solved, would be of great assistance to the development and advancement of the vegetable oil industry.

Insecticide Laboratory

Another laboratory in which work is being conducted that is of special interest to food producers and consumers, is the Insecticide and Fungicide Laboratory, in charge of Dr. John K. Haywood, Chief of Miscellaneous Division and Chairman of Insecticide and Fungicide Board.

Dr. Haywood received a B.S. degree from Cornell University in 1896 and entered the service of the Department of Agriculture in 1897. In 1907 he did some post graduate work at George Washington University, receiving the degree of M.D.

Since entering the service Dr. Haywood has had wide experience in the analysis of various products handled by the Bureau of Chemistry. At one time he had general supervision of the water laboratory, as well as the cattle and stock feed laboratory, and in addition handled the miscellaneous products which were not regularly assigned to other laboratories.

The work of the Insecticide and Fungicide Laboratory consists in: (1) The examination of insecticides and fungicides, including disinfectants, (2) investigation and research in connection with the production, properties, and application of insecticides, fungicides and related products, in cooperation with the Bureau of Entomology and Bureau of Plant Industry, studies on the effect of insecticides and fungicides on plants and the contamination of the sprayed products from the standpoint of the consumer, and the development of new insecticides and fungicides and the study of their properties; (3) research upon appropriate standards for insecticides and fungicides, upon adulterants and the means of detecting them, and upon the methods of analyzing insecticides and fungicides.

Under the first item the laboratory has analyzed since 1913 more than 14,000 samples of insecticides and fungicides, including disinfectants. Several thousand other analyses have also been made in connection with the research work of the laboratory.

Since the enactment of the Insecticide Act of 1910, Dr. Haywood has had charge of the analysis of samples taken in connection with the enforcement of that act.

Protein Investigation

Dr. David B. Jones, chemist, acting in charge of the Protein Investigation Laboratory, is a research man of more than average ability, and has done a great deal of work on the isolation and hydrolysis of proteins.

After graduating from Ripin College in 1904, with the degree of A.B., Dr. Jones for several years conducted research work on protein hydrolysis at the Connecticut Agricultural Experiment Station. He later did some post graduate work at Yale University, receiving his Ph.D. in 1910.

Dr. Jones has applied the butyl alcohol extraction method of H. D. Dakin for the determination of amino acids to the hydrolysis products of coconut globulin, and by that method determined glutaminic, aspartic, and hydroxyglutaminic acids, also proline and a peptide anhydride. Work is also in progress on a method of separating alanine from valine by means of their lead salts.

For some time it has been known that only certain proteins are capable, unsupplemented, of furnishing all the necessary nitrogenous constituents of the diet. Others must be supplemented by the addition of those ingredients in which they are deficient, if they are to be utilized as food. It is therefore of great economic importance to know in what manner a given protein is deficient in order that its deficiencies may be compensated for. Such knowledge which has been lacking for many of the most important food proteins is now available in the Protein Investigation Laboratory.

Among the proteins studied are those of barley, kafir corn, the peanut, buckwheat, several species of beans, and tomato seed. The reasons why some of these foodstuffs are not satisfactorily utilized have been disclosed and the remedy shown in a number of instances.

Work for Other Departments

Because of the bureau's fitness, in the matter of both personnel and equipment, for conducting chemical, microscopical, and microbiological examinations, many of the other Government departments and bureaus have acquired the habit of turning over to it certain parts of various problems coming within their jurisdiction.

For example, the Post Office Department submits for analysis samples of drugs, cosmetics, depilatories, "fat producers," "fat reducers," food suspected of containing poisons, and other material going through the United States mails which is believed to be fraudulent or harmful. The Treasury Department enlists the aid of the Bureau of Chemistry in devising currency paper which is difficult to counterfeit and at the same time is as serviceable as possible. Many samples of foodstuffs and other supplies for the Army are submitted by the office of the Quartermaster General of the Department of War for analysis by the bureau.

Uniform Grade of Sirup Needed in Sugar States

Attention is now being given to the production of a cane sirup of uniform standard quality by the Bureau of Chemistry, United States Department of Agriculture, which bids fair to be of great economic importance to the cane-producing states.

A more extensive market for cane sirup is of great importance in the agricultural scheme of a large area of the South. In many sections cotton can no longer be profitably produced on accout of ravages of the boll weevil. It is necessary to adopt a more diversified scheme of agriculture, and sugar cane is one of the crops on which greater reliance should be placed. It is one of the surest crops which can be grown in that region. The harvesting and production of cane sirup comes at a time of the year when farm labor can be used very advantageously for that purpose. Farmers of the South are eager to increase their acreage of sugar cane. This is not possible, however, unless a more adequate market is developed for cane sirup through uniform grading.

Canners Urge Greater Immigration

National Association Wants Lifting of Restrictions to Permit Entry of Agricultural Workers

Convention at Atlantic City Attended by Close to 5000 Persons

THE sixteenth annual convention of the National Canners' Association was held January 22 to 27 in Atlantic City. The convention, which at its height probably numbered almost 5,000 persons in attendance, broke all previous records of the association's annual meetings. In conjunction with the National Canners' Association, conventions of the National Food Brokers' Association, and the Canning Machinery and Supplies' Association were held. As part of the convention there was an exhibit of machinery on Young's Million Dollar Pier and exhibits of canned foods and raw materials on the Steel Pier.

At the opening session of the convention, President James Moore, Rochester, N. Y., said that he regarded the meeting not only as a convention of the association but as a convention of the whole canning industry. "Only as an expression of the industry at large," he said, "can the association expect to flourish and restore its numerical losses in membership of last year. It has, within the past ninety days, almost doubled its membership and is back on its former basis."

On Tuesday, January 23, there were meetings of the Tomato, Pumpkin and combined Wax and String Bean Sections and the Beet Canners at various hotels and on Wednesday meetings of the Pea and Fruit sections were held. The Corn and the Fruit sections and a combined meeting of the Kraut Section and the National Kraut Packers' Association were held on Thursday. In addition to the exhibits there were numerous entertainment features provided for the members and their guests. The American Can Company was host to the members of the association, providing an entertainment on the Garden Pier and the Canning Machinery and Supplies Association gave a luncheon and musicale at the Ritz-Carlton Hotel. A special dinner dance was held at the Hotel Traymore on Wednesday evening and a vaudeville show and a series of swimming contests were held under the auspices of the Canning Machinery and Supplies Association at the Hotel Ambassador.

Speakers at the general sessions of the association held on Monday, January 22, included: Ernest E. Finch, vice president, Canning Machinery and Supplies Association, Cincinnati, Ohio, who spoke on "What the Machine Manufacturer Owes to the Canner"; James L. Ford, Jr., president, National Food Brokers' Association, St. Louis, Mo., whose address was the "Food Broker and His Relation to the Buyers and Sellers"; W. G. Campbell, acting chief, Bureau of Chemistry, Department of Agriculture, who covered the work being done by the bureau; J. W. Herscher, president, National Wholesale Grocers' Association, whose subject was "The Importance of Future Sales for Both Distributor and Canner"; Henry Kohl, president, National Chain Store Grocers' Association, Jersey City, N. J., "How Best to Impress the Consumer"; Francis H. Kamper, president, National Association of Retail Grocers, "How to Increase the Consumption of Canned Foods"; J. H. McLaurin, president, American Wholesale Grocers' Association, Jacksonville, Fla., "Relationship of Quality to Distribution." Some of these addresses are given in part in this issue of The American Food Journal.

Officers of Canners' Association for Ensuing Year

President—James A. Anderson, Morgan, Utah.
First Vice President—Royal F. Clark, Beaver Dam, Wisconsin.
Second Vice President—Robert M. Barthold, San Francisco.
Secretary-Treasurer — Frank E. Gorrell, Washington, D. C.

DIRECTORS FOR FULL TERM

William H. Taylor, Le Sueur, Minnesota.
Charles A. Yunker, Markeson, Wisconsin.
M. W. Jones, Sac City, Iowa.
Hugh Kennedy, Lankershim, California.
W. W. Wilder, Clyde, Ohio.
John S. Mitchell, Windfall, Indiana.
W. B. Stokely, Jr., Newport, Tennessee.
George L. Baker, Colorado.
Laurence Meulendyke, Rochester, New York.
Harry E. MacConaughey, San Francisco, California.
William McEwing, South Haven, Michigan.
Ira Hutchings, Corvallis, Oregon.

DIRECTORS TO FILL VACANCY

Robert M. Barthold, San Francisco, California.
John S. Souders, Indiana.
Philip Larmon, Chicago, Illinois.
L. S. Argall, Marshalltown, Iowa.
Charles T. Wrightson, Easton, Maryland.

Resolutions Adopted

At the closing sessions of the convention several resolutions were adopted, one of which called upon Congress to take immediate steps to modify existing statutes in reference to immigration to that there may be admitted into the country a large number of intelligent and desirable residents of other countries who are skilled in agricultural pursuits. The resolution suggested that those so admitted shall enter only agricultural pursuits or industries growing out of the same and shall remain in such field for a period of at least three years after admittance into the United States. Resolutions of thanks to the American Railway Association for aid during the recent coal and railroad strikes, to the United States Department of Agriculture and the Secretary of Agriculture, and to Secretary of Commerce Herbert Hoover, were also adopted. The convention pledged its support of the economic conservation program of the Department of Commerce but sounded a warning that a general cry for standardization was likely to result in confusion. The various sections of the associations were urged to cooperate with the Joint Committee on Definitions and Standards to promote suitable grade definitions and other measures looking to nation-wide standardization of grades.

Calls Canning Greatest Industry

"The National Canners' Association represents the greatest industry in the world today," said E. E. Finch, vice-president of the Canning Machinery and Supplies Association, at the general session of the convention. "I have no figures for comparison as to the invested capital, turnover or profits of the coal, or steel, or oil industries of this country," he said, "but while we look to these latter as our greatest industries I tell you that the canning industry, the industry that prepares, or should prepare, the food for not only 120,000,000 of people in this country, but for other countries as well, is by far the greatest industry in the world. And from observation it seems to me that the canner fails to realize that his business is one that should be the proudest boast of his life."

Mr. Finch called attention to the need for a proper marking of cans to show what grade of product the can contains. "When our wives go to buy a can of peas or corn or tomatoes, or something else, they fail to find any distinguishing mark or name on the label that tells them whether they are good goods or whether they are not," he pointed out. "When a canner fails to put on a can of goods some mark that designates it as A-1, first-class or A-1, second-class, or that it is just plain third grade, then he lacks pride."

Concluding Mr. Finch said: "Our association wants to see the canners' industry grow. We want to see it take its rightful place. We want to be able to point with still greater pride to the fact that we supply that industry with what it needs."

Says More Tomatoes Could Be Sold

In an address before the Tomato Section, under the chairmanship of H. L. Herrington of Ogden, Utah, Walter B. Timms of Warmington, Timms & Company, New York, declared that it is evident that a much larger quantity of canned tomatoes may be consumed in the United States annually under favorable conditions than the total of the 1922 pack. "It is my very earnest belief," he said, "that we should dispose of, for domestic and export trade, at least 25,000,000 cases of tomatoes annually, but in endeavoring to increase the consumption certain factors must be taken into consideration, otherwise any increase in the production beyond a certain point will mean, as it has in the past, an excess stock at the close of the season, with declining prices.

"No concerted effort has been made to increase the consumption of canned tomatoes," said Mr. Timms. "This should be done and may be accomplished by several methods." Mr. Timms then pointed out that tomatoes are a staple article of food and will not be bought freely by the consumer at comparatively high prices, a fact that has been definitely illustrated in the past few years. A second point that he made was that there have been practically no improvements in canning methods or the quality of the raw material in many years. There have been improvements in sanitary conditions under which tomatoes are packed and the elimination of water from canned tomatoes a few years ago was a great step forward. Mr. Timms suggested that it might be to the advantage of the canner to study the Italian canning of tomatoes and perhaps produce a similar article, pointing out that Italy has practically captured the entire European market.

Fred S. Pritchard of the Bureau of Plant Industry, Department of Agriculture, who spoke on "Tomato Diseases and How to Overcome Them," confined his remarks to three principal diseases of the tomato crop. These three diseases caused losses in the period from 1918 to 1921 of 250,000 tons from tomato leaf spot; 100,000 tons from tomato wilt; and 55,000 tons from early blight. Mr. Pritchard accompanied his address with stereoptican views of plants attacked by these three diseases and explained the appearance of the plants and the methods employed for control of the diseases. He pointed out that development of resistant varieties is the ideal means of control, but so far all the domestic and foreign cultivated tomatoes as well as the wild varieties obtained have shown themselves equally susceptible to some one of these diseases.

Other speakers at the Tomato Section were William Silver of Aberdeen, Md., who spoke on "Produtcion Costs," and Leroy V. Strasburger of Baltimore, Md., whose subject was "A Simple Method for the Determination of Specific Gravity of Tomato Pulp."

At the Pumpkin Section, presided over by C. J. Mitchell, Eureka, Ill.; Winifred Stuart Gibbs, associate editor, The American Food Journal, spoke on the "Value of Pumpkin in the Diet." There were reports of committees followed by discussion.

Under the direction of H. E. Halstead, Cortland, N. Y., chairman of the Green Bean Section and Merritt Greene, Jr., Marshalltown, Ia., chairman of the Baked Beans Section, the joint session of the Wax and Green Bean Section and the Baked Bean Section convened to hear the following addresses: "Importance of the Standardization of the Quality of String Beans," by Norman J. Griffith, Utica, N. Y.; "Cost Finding by Sizes of String Beans," an address by E. J. Coleman, auditor, New York Canners, Inc., "Processing String Beans," by Dr. W. D. Bigelow, chief chemist of the National Canners' Association; "Complete Processing Baked Beans," by Dr. F. F. Fitzgerald, American Can Company; "Cost Packing Baked Beans," by James W. McCall, Gibson Canning Company, Gibson City, Ill. There were also reports of committees and discussion.

Among the speakers at the Pea Section, under the chairmanship of E. B. Cosgrove, LeSueur, Minn., were A. E. Stevenson, research laboratory, National Canners' Association; J. E. Dudley, Jr., Bureau of Entomology, Department of Agriculture, Madison, Wis.; C. G. Woodbury, director, Bureau of Raw Products Research, National Canners' Association; A. T. Bacon, Chicago, Ill.; and William C. Leitsch, Columbus Canning Company, Columbus, Wis.

Good Demand for Peas

Mr. Leitsch reviewed conditions in canned peas in 1921 and 1922. In concluding he pointed out that the market today is almost bare of good peas, with the liveliest interest ever experienced in the month of January in the history of the industry. "Do the jobbers realize what this means?" he asked. "By reason of the excellent quality the taste for good peas has been develped, business conditions, particularly in the manufacturing districts have permitted more liberal buying of high quality food products, and if people continue fairly prosperous there will be an even greater demand for good peas next year than in the past. Should the production of small and fancy peas fall to a normal percentage of even an increased pack there will not be enough peas of this kind to supply the demand."

C. G. Woodbury, whose address was on the "Work of the National Canners' Association in Connection with Agricultural Problems," spoke briefly of the investigation of pea aphis. "The insect has been known to entomologists for many years," he said, "and considerable study has been devoted to it." Nevertheless, no remedy has been worked out which can be recommended confidently to canners as practiced and worth while. Recently new remedies for other aphids or plant lice have been atracting attention and the impetus which has been given to research on this problem is gratifying. Canners in all sections will follow with keenest interest the progress of the investigation which will be under way next season.

Mr. Woodbury also spoke of the quality of Alaska peas generally offered through the retail trade. "One hundred and fifty-six samples of seed were purchased from retailers in the open market, the dealers not knowing the samples were for Government test. Of the 156 samples of alleged Alaska peas," said Mr. Woodbury, "only a little over half was fit to be used for the canning crop. Certainly such a picture emphasizes the necessity for some kind of protection for the buyer of seed different from or better than that which is available today."

In explaining his work and the investigations being made to improve canned corn, in another address before the Fruit Section, Mr. Woodbury described a survey made which showed that cooperation with the State and Federal research agencies is developing along sound lines which are of advantage both to the State and Federal scientists in their work and to the canners themselves. It also showed, and pointed out, that the improvement of sweet corn is recognized as an important and worth while undertaking by the experiment stations in the canning states and by the Federal Department of Agriculture.

F. M. DuPont, at the meeting of the Kraut Section, delivered an address on the Industrial Chemical Institute at Milwaukee. The adjournment of this section was followed immediately by the meeting of the National Kraut Packers' Association, at which William Clendenin discussed "The Sauer Kraut Advertising Campaign—the Biggest Success of Its Kind on Record."

Some of the addresses delivered at the convention are printed on pages following.

Standards of Quality in Canned Foods

Acting Chief of Bureau of Chemistry Points Out How Association Can Help in Promoting Protection for Consumer

By W. G. CAMPBELL*

Acting Chief, U. S. Bureau of Chemistry

THE primary function of agricultural industry is the production of food. It follows naturally that the principal task of the Department of Agriculture and of its respective bureaus is the prosecution of work through their various special lines that has to do with the production, the conservation and the utilization of foods. The Bureau of Chemistry as a unit within the Department of Agriculture designed primarily for the exploitation of the science of chemistry in the betterment of the agricultural interests of the country is charged with the performance of a three-fold task: It is concerned with the manner by which this science may be utilized, first, in a cultural way to the immediate benefit of the farmer, and, second, in a technological way to the benefit of industry utilizing agricultural output.

Improve Processes for Producing Food

Food manufacturers have a greater interest in the latter phase of the bureau's work. The improvement which has been recorded in the preparation and delivery of the crop of the farm in the way most acceptable for general consumption is a testimonial to the value of applied science. In this day of universal realization of the advantages and conveniences made available through progress which were impossible to conceive a few generations ago there have very naturally developed on the part of the public greater exactions and greater discrimination in their demands with respect to both the products and the manner in which such products shall be served. It has become necessary therefore in the maintenance in public favor of an output or of a service that the responsible industry concern itself with the development of every practicable improvement. In recognition of this undertaking as one which has a material bearing upon public contentment and welfare our Government very naturally has created facilities for the specialized consideration of such matters.

The Bureau of Chemistry interested originally in those problems of a chemical kind which had to deal with cultural questions most largely is recognizing that more and more its particular value lies in the solution of those technological difficulties which will facilitate the utilization of agricultural raw materials. The funds to support such effort and the means by which the results of such work could be made immediately available have not heretofore existed to the extent that it is hoped they will exist in the future.

Better Utilization of Sugar Cane

If I may indulge in a concrete illustration, I would direct your attention to the fact that for years one of the principal agricultural crops of the South has been sugar cane. Outside of the state of Louisana sugar cane is grown in the United States solely for the purpose of making sirup. Throughout the life of this agricultural enterprise it is a remarkable and an astounding fact that notwithstanding the facility with which this crop can be produced in the section where climatic advantages obtain, there has not been the development of cane sirup as an article of food nationally known. The explanation is that the difficulties in the manufacture and marketing of cane sirup were so great that they could not be overcome except for the production and sale of the product on a restricted local sale. The tendency of the product to ferment in the event of failure to concentrate it to a sufficient density on the one hand and its crystallization if over-condensed on the other hand prevented a satisfactory exploitation of it upon an adequate commercial scale.

More Cane and Less Cotton

Appreciating the fact that cotton, the staple crop of the South, was through the ravages of the boll-weevil becoming annually more and more impaired and recognizing the necessity for the development of agricultural effort in that section toward the production of crops suited to the natural conditions, the bureau undertook to determine some manufacturing method by which the particular difficulties to which I have referred might be obviated. It was found as a result of laboratory operations that by the introduction of invertase, concentration in a degree which would prevent fermentation could be achieved without the product crystallizing. This immediately opened the field for the more extensive manufacture of this food commodity. Instead of its sale for manufacturing purposes with a view to blending it with sirups of a character not susceptible to crystallization it is now possible to contemplate the production and the delivery of this article of food to every section of the country where it may establish itself on its own high merit without the necessity for manipulation with other products.

There are over 244,000 farm sirup plants in the South. At the present day the output of these establishments is approximately 50,000,000 gallons. While the work of the Bureau of Chemistry, which disclosed the advantage of the use of invertase in the way that I have indicated, has been of several years' duration, the industry with a few individual exceptions has not taken advantage of this new process which has been reported and published through the channels available to the bureau for the distribution of information concerning its activities. A very material amount of the time of the force specializing on this particular feature of work was spent last year in demonstrating the process of manufacturing by the use of invertase. While the success of each demonstration was gratifying and while the advantage of this improved method of manufacture was recognized in each plant where our representatives worked, it was apparent that the task of communicating in this personal and direct way with the total number of sirup manufacturers was too colossal to make possible any marked progress.

Produce Standardized Cane Sirup

The program therefore was modified this year. In cooperation with the Texas branch of the Federation of Farm Bureaus a cooperative assembling and blending plant was erected at Lufkin, Texas, in which was incorporated the ideas of the bureau concerning the kind of equipment preferred for the purpose. This establishment is not only supported but is owned by the cane growing and sirup manufacturing farmers in the adjacent community. Through this contact the conclusions of the bureau concerning the most satisfactory equipment possible with appropriate economy have been expressed, not only, but the manufacturing improvement incident to the use of invertase has been communicated in a decidedly more effective way than would have been possible through individual approach. There is another very important advantage that could be gained from the organization of this industry on a bigger scale than that represented in this particular locality. Good business demands the production of an output capable of duplication. This meritorious article of food has heretofore suffered a discrimination against it because the 244,000 producers represented just so many different grades of sirup when considered from the standpoint of variations in color, flavor, consistency and general character.

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*Address delivered before National Canners' Association at Atlantic City, N. J., week of January 22.

The advantage of an organization through which such innovations as may be developed by those agencies whose achievements are the heritage of the public can not be disputed. Once organized it may happen with progressive associations that there is a recognition of the need for creating an independent body of scientific workers whose exclusive time may be devoted to the consideration of the problems of a particular industry. This may be illustrated by the policy of your own body in creating your research laboratory.

Trade Associations and the Food Law

While this may illustrate a worthy function of trade associations, the thought which it is my purpose to advance most particularly is the power of such associations to facilitate the enforcement of regulatory measures such as the Food and Drugs Act, which represents the third phase of the bureau's service. The executive officers charged with the enforcement of this law have said on innumerable occasions that it was their conviction that the law while criminal in caste was a corrective rather than a penal measure. This being true, there is greater concern over the prompt and permanent rectification of some act which is in conflict with the provisions of the law than there is about the visitation of maximum penalties. Steps may not be inaugurated for the correction of a condition until knowledge shall have been obtained of the existence of that condition.

Some body through which authentic information of manufacturing conditions may be obtained and through which in turn knowledge of the specific application of the law to such conditions may be disseminated is essential to those expeditious and inexpensive modifications which must be made if the manufacturer is to be law abiding in his operations. An organization of this character has an enhanced value when one realizes that it is the exceptional manufacturer or canner only who as a matter of volition rather than compulsion will not bring about a correction after the error has been pointed out to him. The consuming public is progressively demanding more adequate guaranties concerning its food, especially freedom from contamination of the kind which might be expected from the existence of insanitary establishments. This demand is not unique to the consuming public of this country alone.

In recognition of the fact that certain foreign countries with which American food manufacturers have enjoyed a profitable trade in the past have imposed as a matter of appropriate governmental supervision certain specifications with which imported foods should comply, Congress several years ago made provision in the Agricultural Bill for examination of food products by the Bureau of Chemistry where a request to this effect might be made by the exporter in order to meet these foreign requirements. Our work under this particular item has gradually and perceptibly increased. With such increase there have been added difficulties due to that ever-increasing feature of these specifications which relates to sanitary conditions.

Canners' Association Fosters Sanitation

The Federal law has no sanitary feature. Its provisions apply to the product itself, and a control of factory sanitation may be undertaken only indirectly when disregard of the fundamental rules of cleanliness and decency results in the preparation of foods which may themselves be classed as filthy, putrid or decomposed. To my personal knowledge food manufacturing associations have exercised in a very real way their influence for an improvement of the various industries in this country on that feature which the Federal law is lacking in authority to control. It would seem that neither legislation nor the importuning of trade organizations should be necessary for the maintenance of a clean plant or the prevention of the use of dirty and unsound raw materials. Personally I feel that the food manufacturer who packs a decomposed or rotten article of food should be drastically punished. It is unfortunate that the law itself does not make provision for a more drastic penalty. I say this without hesitation because of my conviction that you as a collective body of individual food canners entertain the same views. I know that my expression in this respect coincides with the policy of your association.

Our difficulty in the supervision of this matter is not that we have to deal with concerns which are criminal in their intent or which knowingly engage in such practices. It is an easy matter when operating on large proportions some times under adverse conditions and ordinarily against time to disparage the value of punctilious observations in this matter, particularly if the establishment is one of old standing in which present day practices may be said to be an inheritance.

In making this acknowledgment of the benefit of trade associations in so far as their worth to the consuming public and to law enforcing agencies is concerned, and in doing this I am sure that you in a greater degree than I appreciate their advantages from a manufacturing and marketing viewpoint, I am mindful of those splendid evidences of progressive thought and action expressed in the recent pamphlet of the National Canners' Association under the title of "What Every Canner Should Know." The expressions made in that bulletin have to do in a very vital way with the health of the public, and in an equally vital way with the responsibility and prosperity of the canner. I feel therefore that it is a privilege not only for the responsible officer in the Bureau of Chemistry, which is charged with the enforcement of the Food and Drugs Act, to accept such opportunity as may be presented to him for a conversation with you in regard to these matters, but that in the futherance of the obligation of that particular governmental agency it is his duty.

Limitations of Food Law

I shall not undertake even a cursory analysis of the requirements of the Federal law. Through years of experience in the preparation and marketing of your products you have acquired a familiarity with its most essential features. However, there is one phase of that statute which I would like to bring to your attention at this time. In very few respects is the act positive. There are compulsory requirements concerning declaration of net content, the labeling of imitations, and the like. It is a general characteristic of that law, however, that its requirements are expressed in a negative fashion. Outside of the declaration of the net content it does not impose upon the canner the necessity of making ordinarily any statement whatever on his label. It declares it to be an offense, however, if such statements as may have been made in the individual preference of the manufacturer are false and misleading. In the words of a comparatively recent decision of the Supreme Court to the extent that statements may be made, this law "enjoins the truth." In considering only the truthfulness of expressions which may be contained on the label, it fails unfortunately to require a statement of the whole truth.

Variation in Canned Food

Because canned foods do not lend themselves to inspection by a prospective purchaser, and because they represent such a material amount of our daily consumption, that portion of the food supply is purchased perhaps with less knowledge by the housewife of the nature, character and quality of the product than most of the other portions which make up the total supply. There is a very wide variation, as you know, in the quality of any canned food product. That variation does not go so much to the value of the product from a nutritional standpoint because in the absence of any practice which may bring about debasement the food value will ordinarily be the same. Those things, however, which bespeak excellence in quality and meticulous care in preparation, factors which denote superiority and which are entitled to command better prices are not made known in a way which is intelligible to the consumer.

The trade itself appreciates these qualities, and for the purpose of facilitating the performance of specific contracts has employed certain nomenclature, such as standard, fancy, extra fancy, and the like. My observation has been that if the consumer entertains an idea at all in regard to the significance of these expressions it is at best vague. If the manufacturer of peas of that quality which the producer considers entitled to the designation "extra fancy" must compete with an output bearing a similar label but which as the result of deliberation or as the result of an entertainment of an entirely different standard of expression by the competitor may consist of peas larger in size, less tender and less sweet in taste, such manufacturer is placed at a disadvantage, and is not able to obtain the preference in trade which would undoubtedly be his if inspection prior to purchase were possible or if as an alternate some definitive statement portraying the actual quality could be expressed on the label.

This packer may entertain the view that he should be protected against such competition and that the source of his protection should be diligent enforcement of the Federal Food and Drugs Act. In so far as that law is designed to protect both the consumer and the honest manufacturer his assumption is correct. The difficulty in securing redress through this appeal is the inability of the Government to establish the false and misleading nature of his competitor's label. Regulation is not difficult in those cases where some expression of excellence may have been employed on an article which is beyond controversion inferior in its nature. The difficulty arises in those instances where the variation is not so pronounced.

Standardized Grades Essential

If it were possible to indicate in a precise way a clean-cut cleavage between those grades which at present are universally yet more or less vaguely conceived it would be practicable under the terms of the Federal law to compel an appropriate observance of them in trade practice either through the promulgation of standards or by depending upon competent tradesmen to testify for the Government in those cases which may have been developed for prosecution. The idea of promulgating standards for such products is one which the Bureau of Chemistry has had under consideration for some time. The difficulty of formulating in precise terms those expressions which define accurately different grades is responsible for the failure to have made greater progress in this matter than has been recorded.

The task has not been made lighter through the existence of a trade custom universal in its scope and distinct in concept. The value of a standard which serves as a basis for the enforcement of the law depends upon the extent to which it is capable of being precisely understood by the public and practicable of enforcement by administrative officials. You as an industry can contribute very materially to the solution of this difficulty through the formulation of plans advanced and supported by your association for the crystallization of trade opinion concerning such matters and by establishing trade practice upon such expressions.

Meanwhile there is nothing to prevent a packer from making a truthful statement on the label in any form that he desires about the character of the article in the can. In those products where quality depends at least in a measure upon such factors as size, color, variety or character of packing medium, an expression of such information upon the label would promote more intelligent traffic.

I advanced these suggestions in the belief that such progress as may be made from your consideration of this thing will be for the creation of conditions under which commercial transactions may be carried on in a discriminating way. Purchase through discrimination will have a tendency to place a proper premium upon the superior article. This should inspire an attempt on the part of the canner to produce the best. Inevitably, this tendency will be to the untold benefit of the entire industry.

How Bureau of Plant Industry Helps Canners

A Review of the Work Which Has Been Done by Government Department to Make Work of Fruit Preservation Simpler

By WILLIAM A. TAYLOR*

Chief, Bureau of Plant Industry, U. S. Department of Agriculture

As the work of the bureau comprises those projects of the Federal department which have to do directly with the productions of all crops, it covers a wide range of activities. Having very little regulatory work to perform, its primary functions are research and service. It investigates plant diseases, such as those affecting fruits, forest and ornamental trees and shrubs, cereals, cotton, truck and forage crops and of tobacco. It prosecutes important plant breeding projects such as aim to produce improved and disease resistant varieties of these and other crops. It carries on agricultural exploration work in foreign countries for the purpose of locating and bringing to this country with a minimum of risk of introducing plant diseases and insect pests, such crop and ornamental plants as appear worthy of testing in connection with the development of desirable new plant industries in various portions of the United States including our insular possessions.

In the work of the bureau considerable attention is devoted to investigations looking toward more effective handling, transportation and utilization of perishable crops, both vegetables and fruits, to the end that unnecessary waste may be prevented through more efficient distribution at times of temporary surplus of production, a matter fundamentally important to the producer in securing fair prices for perishables at such times. The bureau also prosecutes three great regional plant disease control campaigns in cooperation with the states most seriously affected. These are for the eradication of the bacterial citrus canker disease in the Gulf States; the blister rust disease of White Pine in the New England and Great Lakes regions and the Pacific Northwest; and the campaign for the control of black stem rust of wheat through eradication of the common barberry in the great interior winter and spring wheat regions of the Mississippi Valley and Northern Great Plains.

The appropriations for the work of the bureau total about $3,775,000, of which approximately $2,500,000 is devoted to research, the remainder covering the service, extension and regulatory activities.

The personnel of the bureau comprises approximately 1,700 permanent employees, about one-third of whom are headquartered in Washington, the other two-thirds being located at various points in the field where conditions suitable for the various lines of experimentation are found either at state or independent field stations or on representative farms and orchards in typical producing districts.

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*Paper read at Convention of National Canners' Association at Atlantic City, N. J., week of January 22.

While none of the research work has been planned specifically to meet the technical needs of the canning industry in distinction from those of growers and consumers of the crops, many features of it more or less directly affect the canning industry. Only those which bear somewhat directly on the fruit canning industry will be discussed.

Varietal Adaptability and Breeding

While commercial fruit canning in the earlier history of the industry appears to have been centered largely in the cities and based on the idea that the commercial canner could only operate when the raw material was obtainable at prices ruinously low as in the case of Saturday gluts of dangerously stale fruit, it is assumed that that day has passed. The location of canners primarily, with reference to fairly steady operation each year throughout the period of ripening of the desired varieties, has for many years characterized the industry. If a dependable supply of suitable fruit is to be had year after year growers must know that the varieties planted are adapted to their production conditions such as climate and soil, as well as capable of producing fruit of a quality suited to the purchasers' requirements.

The specialists of the bureau, as well as those of many of the state experiment stations, are constantly studying the reactions of fruit varieties to different environments as regards regularity of production, susceptibility to diseases, uniformity of shape and size, and general dependability as regards color, texture and quality. The planting of a variety in a region to which it is not adapted will inevitably result sooner or later in a product uncertain as to quantity and usually variable as to quality. Heavy losses to growers have in the past frequently occurred through too extensive planting of insufficiently tested sorts. The almost complete disappearance of thousands of acres of Japanese plums during the past ten to twenty years from the territory east of the Rocky Mountains chiefly because of ill adaptation to climatic conditions illustrates this. The rapid decline of Kieffer pear acreage in the more northern and the more southern areas where that variety was enthusiastically planted as recently as ten to fifteen years ago is of interest to canners. In both of these cases the primary difficulty appears to have been that the varieties failed to qualify frequently as to hardiness, disease resistance or quality of product in particular seasons, though succeeding well in some seasons. Continued thorough study of varieties with prompt and wide dissemination of the conclusion reached will be needed in many parts of the country for many years to come. Sooner or later every investigator of varietal adaptability problems finds that no perfectly satisfactory variety exists. And as industrial uses like canning come to require large scale production of particular qualities, maturing at fairly definite times, the need for systematic breeding to secure the desired combination of qualities becomes apparent.

Several fruit breeding projects of interest to canners may be mentioned. One of these involves the peach and is in progress in California and Michigan where considerable collections of peach seedlings grown from seed brought together from different parts of the world in a search for late blooming forms less subject to spring frost injury, have been assembled. While the work has not been long under way, certain of these seedlings have attracted the attention of canners and are regarded as possessing considerable promise for that purpose.

In the canning of strawberries a variety which is of high dessert quality, which it retains when canned, and one which retains both color and form when canned, is very much needed in order to make the canning of strawberries commercially satisfactory. Breeding work with the object in view of producing a variety having these characteristics is in progress and it is felt that the work has gone far enough to make ultimate success reasonably certain. Certain varieties have already been developed which possess in a considerable measure the desired qualities but it is definitely planned to carry this work farther in the conviction that still greater improvement can be secured. A similar line of work is in progress with respect to raspberries. A berry which will retain its form and color when canned is essential for good results in canning.

Investigations of Fruit Diseases

It is of course obvious that the devising of practical methods of controlling diseases which menace the life of the trees and vines, or interfere with the regularity of production of fruit crops is vitally important to the canning industry. Such diseases as yellows and crown gall of the peach, pear blight, the fungus root rot of California orchards, peach leaf curl, brown rot of peach, plum and cherry, bitter rot of the apple, and mosaic disease of raspberries have been the subject of such extensive research that fairly effective controls for most of them have been devised.

Much less has been accomplished with respect to overcoming some of the so-called physiological diseases which are especially troublesome in some of the Pacific slope fruit districts, such as little leaf of the apricot and certain chlorotic diseases of the peach.

Less conspicuous than these field diseases but very troublesome at times to canners are some of the decay fungi and spoilage diseases which attack fruits during the processes of packing, transporting and storing. In recent years considerable progress has been made toward better understanding and control of them. Certain important phases of this work have related to the rots of strawberries, blackberries, raspberries, and other small fruits. This group of diseases is particularly affected by local climatic conditions at the picking time, especially by periods of heavy rainfall and high temperature. While the main difficulties occur on fruit shipped long distances to terminal markets, the canner in attempting to handle fruit subject to these diseases often has serious trouble. The diseases are rather hard to control, but distinct progress has been made along several lines. It is interesting to note that these lines are not the commoner ones of spraying, eradication and similar methods, but so far have related mainly to methods of picking, handling, and storage. The temperature relation of these rots and of the rot fungi causing them have been rather carefully worked out. Many of them proceed very slowly at low temperatures and extremely rapidly, so much so as to spoil fruit over night, at high temperatures. One method which has been found extremely important in reducing these troubles with strawberries and bush fruits consists in picking the fruit early in the day while it is cool and when the dew is still on. Formerly this wet fruit was not supposed to keep well. Our workers have demonstrated that it keeps and ships much better because it is cooler when picked and remains cooler in the packages, if properly cared for. Careful handling to avoid bruising, which has repeatedly been shown to be important in other fruits, is extremely important in these small fruits. Cool picking, cool storage, careful handling, and storage at low temperatures supplemented by attention to correct growing and fertilizing methods, avoiding the use of too much nitrate of soda or other nitrogenous fertilizers, and the selection of resistant varieties comprise the promising methods for reducing these troubles.

Storage and Handling of Fruits

The investigations of the Bureau of Plant Industry in the handling and storing of produce are in many cases of particular interest to the canning trade. The time of picking pears, plums, peaches, etc., bears a very close relationship to the quality of the canned product. Analysis of pears and plums has shown that there is a constantly increasing sugar content, a decreasing acidity and increasing aroma of the canned fruit associated with fuller maturity on the tree.

It has also been shown that California Bartlett pears can be stored from one to two months without appreciable loss if picked at the right time and stored at a temperature of 30 to 32 deg. Fahr. This lengthens the canning season and makes it possible to take care of certain varieties of cling peaches which mature at the same time as the Bartlett pears. The problem of cold storing peaches for the canneries in order to lengthen the canning season is one which needs attention also.

Some work has been done in the holding of berries, cherries and other highly perishable fruits for a short time in condition for canning, and methods of holding many soft fruits almost indefinitely by freezing them and keeping them frozen until they are required for use for pie stock or for jams or preserves, have been given considerable attention and are now on a commercial basis.

Experimental Studies of Unfermented Fruit Juices

The studies of grape varieties with reference to their possibilities for the making of unfermented beverage juices have been in progress for four years after a year of preliminary work. A collection of 75 varieties of table and wine grapes grown under controlled conditions in an experiment vineyard at Vineland, N. J., has furnished material, and samples of juice from each of these varieties have been made each year under standard conditions. The purposes of the work have been to improve the quality of bottled grape juice by devising means for securing greater uniformity in the product and reducing the alterations produced by pasteurization to a minimum; to reduce costs of production by simplifying the processes of preparation; and to increase the use of grapes for unfermented beverage purposes by developing new types of grape juice of high quality from varieties not now used for such purposes but formerly extensively grown for wine-making.

The lines along which the work is being prosecuted are as follows:

1. A study of the range in chemical composition of grape juices made from the same plantings over a series of years under a variety of seasonal conditions. Complete data as to nature and amount of sugar content, acidity, tannin and pigment content have been obtained for each of the 75 varieties for the past four years. The results give a more complete knowledge of the chemistry of American grapes than we have had, and are of immediate practical value as indicating the effects of climatic conditions, yield, and vine condition upon chemical composition and beverage quality of juices, and as offering guidance in blending of juices to obtain products of uniform composition.

2. A comprehensive study of the effects of pasteurization upon the composition of juices, with particular reference to the effects upon sugar-acid-tannin ratio and upon the palatability and beverage quality of the juice. This has involved a study of the compounds to which juices owe their astringency and of the effect of the heat of pasteurization upon these substances.

3. The possibilities for the use of certain highly productive wine grape varieties as basic stock for beverage purposes, by blending with other less productive grapes of high quality. This phase of the work is necessarily in its preliminary stages, since the chemical studies had to be substantially complete before it could be intelligently carried on.

4. A study of methods of clarification applicable to grape and apple juices. This study, which has been completed and published, had as its purpose the devising of methods which would make possible the production of permanently clear, transparent juices of unaltered flavor and quality without necessity for prolonged cold storage or the use of elaborate special equipment. The work resulted in the development of a method of clarification which enables pressing, clarification, bottling in the final container, and pasteurization to be carried out as a single continuous operation, thus entirely eliminating preliminary pasteurization and storage and greatly reducing the cost of production.

The studies of apple juices carried on in the department have been conducted on a somewhat similar plan, but have been a part of a larger project having as its purpose to ascertain for a large number of apple varieties the most effective methods of employment for surplus and unmarketable stock. A large number of varieties have been studied with respect to their fitness for the making of evaporated stock, with the result that the department is able to recommend with assurance some forty to fifty varieties which under prevailing methods yield evaporated fruit of satisfactory market and culinary quality. In the study of apple juices, chemical studies of the juices of some 300 varieties have been made over a period of four years, along lines identical with those indicated for grape juices, and similar studies of the effects of pasteurization upon chemical composition and palatability of juices are in progress. A classification of apples into groups based upon the outstanding chemical characteristics with reference to their juices has been worked out in sufficient detail to enable the inexperienced cider maker to blend together available varieties in such fashion as to produce a uniform, well balanced juice. The work on clarification of juices to which reference has already been made has greatly reduced the labor of preparing and preserving sweet apple juice while at the same time effecting improvement in the appearance and attractiveness of the product. Incidentally it has been found that the employment of this method of clarification effectively prevents certain undesirable after-changes subsequent to pasteurization and permits the production of a juice which does not alter in flavor on long keeping.

Preliminary studies on the storage of apples intended for subsequent use in cidermaking indicate that by providing storage space under a reasonable degree of temperature and humidity control it is possible to preserve cider stock for considerable periods, thus enabling the cider maker to prolong the period of manufacture over five or six months and to furnish perfectly fresh cider to patrons for this period.

Potential Canning Fruits from Other Lands

One of the ways in which the bureau is very directly assisting the canners is through the introduction of new fruits of potential canning and preserving value in certain sections of the country. In this manner the field of production is being enlarged, and the range of products available to consumers materially increased.

Most of these new fruits are suitable for cultivation in the southern portion of the country, notably in Florida and California. A few of them can be grown in more northern regions. Of these latter, certain varieties of the Chinese bush cherry, Prunus tomentosa, obtained by the agricultural explorer, Frank N. Meyer, seem very promising. This bush cherry is quite hardy, and its fruits have been found excellent for jellies and jams, some individual bushes yielding fruit approaching the red currant rather closely in color, consistency and flavor.

The loquat is a fruit not yet appreciated by the canning industry, though introduced into this country some years ago. Only recently, however, have really good varieties become available, and as these become better known, it is likely that they will be taken up by the canners, since the fruit, which belongs to the same family as the apple and the quince, lends itself well to various methods of preserving.

The mango, termed "the king of

tropical fruits," can be grown in Florida and in our tropical dependencies. In British India, where it has been cultivated from time immemorial, and where it occupies a position comparable to that held by the apple in the United States, it has been found to yield excellent canned products, such as the well-known Indian chutnies and sauces. Recently some of the Indian canners have taken up the problem of preparing canned mangos, and have turned out a product of superior excellence. In appearance and flavor these canned mangos might well be likened to canned peaches. There is every reason to believe that such a product would meet with favor in our markets.

One of the four principal fruits of China is the jujube, until recently known in this country only in worthless seedling forms, but now available in its finer varieties, thanks to the work of Meyer, who secured them in China and sent them to Washington, whence they have been distributed throughout the southern and western states. The jujube is easily grown, and adapted to hot, dry areas where relatively few fruits are successful. Recent experiments carried out by the Department at the Plant Introduction Garden, Chico, California, have shown that this fruit lends itself to preserving in various forms, and it seems likely to assume economic importance in the Southwest within the next few years.

Another famous fruit of China is the lychee, known to most Americans only in the form of dried "lychee nuts," which are sold by the Chinese restaurants throughout this country. Fresh lychees are most delicious, and when canned they are thought by many to surpass the Royal Anne cherry (which they somewhat resemble in character) in delicacy of flavor. It is believed that when its requirements are better understood, the lychee can be grown in Florida and in some of our tropical dependencies. It is a fruit which is now receiving attention at the hands of our experts, and which we believe will some day attract the attention of American canners.

There are several other tropical and subtropical fruits which are becoming established in California and Florida, and which may prove useful to the canning industry. The papaya, a melon which is produced by a tree-like herb, and which yields prodigiously, is used in the tropics for preparing various sorts of jams and preserves. One of the finest jellies known in Brazil is that made from the pitanga or Surinam cherry (Eugenia uniflora), a small cherry-like fruit produced by a handsome bush which can be grown very successfully in Florida. The fiejoa, a fruit closely allied to the common guava, is now being grown in California, and has shown itself valuable for the preparation of jellies and preserves. The carissa, or Natal plum, a South African shrub cultivated very successfully in southern Florida, yields a red fruit the size of a plum, from which is made an excellent jelly.

Says Food Broker Has Full Support of the Trade

By J. W. HERSCHER

President, National Wholesale Grocers' Association

(Note: Mr. Herscher delivered two addresses; the first was to the Canners' Association and the second to the Food Brokers.—EDITOR.)

THE policy of exchanging ideas at convention times is a custom. The National Wholesale Grocers' Association was organized in 1906, and I doubt if a year has passed since the founding of your organization, in which these exchanges have failed to materialize.

The canner, except for spots here and there, has had a good year of it. If my reading of your trade press and personal correspondence did not warrant such a conclusion, the faces at this convention would confirm any guess that I might have. Right here, I want to say something, in simple justice to the wholesale grocer. A year and a half ago, when the consuming demand contracted and all but disappeared, thereby squeezing the retailer, in turn paralyzing the wholesale grocer, and so, in turn, cutting in on the canner, some of your trade papers, and unfortunately, some misguided canners, bundled up all of the troubles of everybody and left them on the doorstep of the wholesale grocer.

We all recall the situation as it existed at that time. Economic conditions beyond your control, or our control, the after effects of war, were most distressing. In addition to this the Federal Government was releasing millions of cases of canned foods in competition with the regular supply, at a time when consuming demand was at a weak point. Even to this day army bacon and No. 3 tomatoes of the pack of 1918 are still to be had! The world over, business was at a standstill, and yet there were those, misled by cunning propagandists, who singled out the wholesale grocer for censure.

With a due sense of modesty, I must insist that you consider the unescapable position of the wholesale grocer. He is the slave of the consumer, just as you are and the retailers are. The wholesale and retail grocers have no final check upon consumer demand or consumer strikes, or control over world-wide conditions.

Most wholesale grocers deal in futures and when they scrutinize prices they are not thinking so much of themselves, or the canners or the retailers, but of the consumer. What attitude is the consumer going to take when these goods are ready for sale perhaps six months hence? We are guessing, and upon our guesses depend hundreds upon hundreds of thousands of dollars. We are not so much bulls or bears as we are business men, harassed by a heavy and uncertain load of responsibility.

I also want to refer to the matter of contracts, in this short talk with you. The pro-rata delivery contract and its abuses threatened the foundations of our industries not so long ago. The wholesale grocer was urging a 100 per cent delivery clause—some demanding it—forgetting under the smart of unjustified short delivery the ruinous risks of the canner in such a contract. It seemed that here indeed "an irresistable force had met an immovable object." The compromise that was developed in which the wholesale grocer is guaranteed an absolutely fair delivery and in which the canner is protected against responsibility for acts of God, merits all the praise that it has received.

I am informed that an additional clause purporting to further protect the wholesale grocer has been suggested. This is a clause designed to give the wholesale grocer the right to call for an arbitration in his market, provided the finding of the canners' association is not satisfactory. This clause has been suggested previously. The contract committee of the National Wholesale Grocers' Association feared that the canners' associations would resent the obvious imputation. But, aside from that, it is difficult to figure how an arbitration committee, sitting in New Orleans, for instance, hundreds of miles away, would be in a position to gather evidence that would impel them to overturn what we would rightly assume would be the honest findings of a canners' association, after an investigation on the ground. However, our contract committees can discuss this further.

In the meantime, we are anxious to extend the mutually fair contract form of the National Wholesale Grocers' Association, especially in reference to terms, liability and delivery to all sections of the country. We find that in some states, particularly in the east and in the south, there are no local or state canners' associations. Canners in these states are selling many items of canned foods, and we believe it would be to their benefit, as well as the benefit of the wholesale grocer, if they would adopt individually the form suggested.

Any speech by a President of the National Wholesale Grocers' Association would be incomplete that failed to refer to the subject of quality in canned foods. You will recall that last year, in particular, the conference committees of the two associations started a drive against what we call substandard canned foods. The canner who packs horse feed in cans and the wholesale grocer who sells it make a great mistake. If they profit temporarily, they do so at the expense of the entire canned foods business, and to their own ultimate injury.

Who is responsible for the substandard evil? The canner who wants to make new competitive prices and has little pride in his product; the wholesale grocer who is not interested in quality and who succumbs to the siren call of meeting any type of competition; the retail grocer who cannot differentiate. A remedy must be found. I can only suggest a general principle. Only a dependable quality of food fit for human consumption should be offered in the canned foods market; the quality that leaves a lingering taste for more and does not disappoint or repel. The costs of preparing and distributing substandard foods must be practically the same as would apply to quality foods.

I have indicated previously my own judgment that the canner and grocer who overlook quality make a great error. I think that statistics will show in all lines of business endeavor that at least 75 per cent of the demand in the American market is a quality demand. If you will study the comparative import figures of the Department of Commerce for the past fifteen years, you will discover that the exports from England to us have far exceeded the exports of Germany to us. Germany has never succeeded in capturing the American market. Germany has always thought of price! On the contrary, England competing largely on the basis of quality, has been most successful in the United States.

ADDRESS of J. W. Herscher, President National Wholesale Grocers' Association, before the 1923 Convention of the National Food Brokers' Association, Atlantic City, N. J.

DURING the past year, there have been conclusive evidences of the strength, vigor and ideals of the National Food Brokers' Association. You can be sure that your association, in its far-sighted endeavor to maintain high ethical standards in business, has the full support of the various branches of the trade. Standing between buyer and seller, as the broker necessarily does, his temptations and problems are many. The individual in all such situations, not only deserves, but must have organized support, if he is to carry on the fight for improved business standards.

As organizations, the National Food Brokers' Association, the National Canners' Association and the National Wholesale Grocers' Association have lived through another exceptionally strenuous year.

Those of use who are familiar with association life, know that, because of the purely voluntary character of the support, financial, physical and mental, times always are strenuous with us. Yet, as practical business men, we all knew that we must have these organizations. Even those who do not come forward as volunteers in the spirit that we would hope that they would, would, if they probed to the bottom of things, if they were quite sure that "George" would not do it for them, agree with us in preaching if not in practicing.

We brokers, canners and wholesale grocers again find ourselves confronted with problems of future sales. No mere man can, with certainty, forecast, much less guarantee, that nature in the largess of her bounty, will produce a bumper crop or a short crop in 1923.

However, we assume that we will see the sun rise each morning. As trustfully as a child, you might say, we have the same faith that crops will mature in 1923. As to tonnage, much less quality, we can have no control or even guesses. Therefore, the buying of futures contains the elements that can either make or break the canner or the wholesale grocer, and seriously affect the broker.

The laws of nature control production; the laws of supply and demand, distribution. With these uncertain elements in mind, I am impelled to suggest to my broker and canner friends that they very carefully investigate conditions as they exist today, as to stocks in suspense, the likelihood of a continuation of a consumption demand, price considered, and what the business conditions are likely to be at the time your products are ready for delivery.

While it is true that under the practices of future buying, the wholesaler and the retailer pay the carrying charges of canned foods, until they actually pass into consumption, my conviction is that the broker and the canner retain a vital interest in their products, clear through to the consumer, and that therefore, they are interested in the conditions that I have suggested above. None of us in looking for a buyers' strike in 1923, unless the secondary inflation movement, against which bankers and economists have been warning us, should develop in a more virulent form.

For one, I am certain that I voice the genuine feeling of practically all wide-awake wholesale grocers, in stating that this year, as in the past, we will buy and sell canned foods futures. We must all realize the nature of the canning industry after our years of experience, which under present conditions, makes future buying and selling almost necessary. Nevertheless, we must proceed with due regard for the economic and financial condition of the country in general.

We all know the broker as a wonderful educational force, and I sincerely trust that we may continue to have the wholehearted and aggressive support of the broker in avoiding the pitfalls of substandard canned foods. America is a quality market, and if we are to encourage the increased use of canned foods, our most dependable advertising can well be centered on the question of equality.

Truly, it would be most difficult to overstate the importance of a more general recognition of the shortsightedness of those canners who put a substandard pack on the market, those brokers who urge their sale and those wholesale grocers who put them into the channels of distribution.

It is true that this is not a new subject. But, it is also true that it is only by constant repetition in industries such as ours, that a fundamental principle can be established and maintained after its establishment.

Trend Toward Higher Quality Canned Goods

Address delivered by J. M. McLaurin, President, American Wholesale Grocers' Association, at the Annual Convention of the National Canners' Association, Atlantic City, January 22, 1923.

IN no phase of trade life today is there to be noted a greater contrast between the methods of fifty years ago and the present than in the quality of canned goods. This is not surprising when he consider the inadequate facilities and crude methods of a half century ago as compared with the scientific conditions of canning food products today.

Fifty years ago with the process of canning fruit and vegetables in its infancy, an article was offered as the best grade which today would hardly be marketable at all. In fact, under our present Federal Pure Food Law it could not be graded as merchantable. It is true that the half century's history of the canned food industry would reveal that at the beginning of that period some fair pack goods were offered, yet the usual run was water-fruit, mostly water and tomato soup.

Today a decidedly changed condition prevails as regards the grade and quality of canned goods. Science has not been content through all these years to turn the search light merely upon the human body to discover its maladies, but it has likewise been active in determining the cause and remedy, and in this study the nation's food has been made a subject of searching analysis, resulting in legislation that has demanded at least purity in the contents of the can. This agitation resulted in a quickened conscience, and advertising and publicity has enlightened the minds of the consumers as to the importance of quality food.

A demand for the best canned foods is increasing and the sale of the lower grade is falling behind. This becomes more perceptible each year, and the reasons are easily discernible. One or two of these reasons are specially worth consideration. First, and I think of the most importance, is a wide spread and organized movement toward the betterment of living conditions. In the great metropolitan centers, and on down to the towns and small villages, as has been preached during the last few years the doctrine of sanitation, hygiene, and physical development, with respect to food, the consumer is asking today, "Is it pure? Is it wholesome? Is it the best grade?"

It is commonly known tht this discriminating interest is not confined to the wealthy or the so-called middle class of consumers, but the laboring class, the man with the dinner pail and the pay envelop is also demanding the best grade of food.

The highly perishable nature of fruits and vegetables, as well as fish and meats, suggests to the lay mind an early state of deterioration and unfitness for food. Consumers, as a class, know and think little of the delicate work of selection of the canner and the scientific sterilization by which these articles of human food are rendered sanitary and nutritious. Unlike most articles of food the contents of sealed packages, canned or glass, can not be approved before purchase by eye or palate. A purchasable article for consumption can become trustworthy and dependable only in the same way that an individual becomes so, that is, by a feeling of confidence and implicit trust born out of years of daily test and satisfactory experience.

After a canvass for an expression concerning the part played by quality in the purchase of canned goods, we find the consensus of opinion on that subject to be that the consumer's demand is becoming constantly more critical and his demand is for a clean, sound fruit put up in attractive packages. Naturally there will always be a certain demand for cheap or standard and sub-standard grades of canned foods. This fact is assured by that highly developed state of competition which has marked the past five or ten years in retail food distributin. Except in instances where a nationally advertised quality of canned food is used as a leader, it will be found that the chain stores and enonomy stores, called by various names, are handling those lines of canned foods where the question of price is featured rather than quality—a condition under which the consumer suffers rather than benefits.

We think another unfortunate situation prevailing at present in the marketing and consumption of quality canned foods is that many of our retail merchant friends make too wide a difference in their selling prices between fancy or high grade canned foods and the cheaper grades. I mean to say, a difference that is disproportionate to the difference in their cost of these articles. In its last analysis the difference in the price charged by the canner and likewise by the wholesaler for the higher grade article and the cheaper grade is not as wide as one might on first thought suppose it to be, and that fact itself encourages distribution and consumption of only the best grade of canned food.

How to Increase the Consumption of Canned Foods

By F. E. KAMPER

President, National Association of Retail Grocers

THE subject assigned to me seems to be a paradox, "How to Increase the Consumption of Canned Foods." Recently my firm has had the greatest difficulty in securing some of your products at reasonable prices.

In trying to get a line on this subject, I believe it is necessary to paint a three-colored label, and into this three-colored label must be blended the product itself; the merchant handling the product or a method of distribution; and the consumer. In order to sell the article we will have to take the process of the sale in the inverse order of the above. People want what they want, and it is the exception that they can be sold on anything, especially food, until in some way an appetite for that food has been created.

Quality is the magic word that means greater consumption of canned goods, and nowadays a second, but not a close one, is the food and health value of the foods. To can an article and to lose the natural flavor of that article is commercial suicide, not alone for that canner packing that particular article, but for many other canners, or broadly speaking, all canners. The sale on one poor can of corn, or peas, will kill more than a dozen sales.

Why do we find the sale of stale, but fresh vegetables, increasing so rapidly over this land, vegetables from distances of thousands of miles, which necessarily must be from three to seven days old before they actually get on the consumers' table? It is primarily because some one of you has had such poor judgment, and the balance of you so little backbone, that you have permitted your careless canner to seal into a tin a bunch of stale vegetables.

I was keenly disappointed that your ambitious and commendable plan of a few years ago to make your label mean something was not continued and carried out. Perhaps it was too far advanced for the great mass of your own craft, and I know that it was too far advanced for the great mass of our own men, but fundamentally, your idea was sound, and a time will come, when all of you would be most happy to be members of this organization, with its seal of inspection that would mean quality and health, and would build that most valuable and real asset, Good Will. Let's hear what the National Association of Credit Men have adopted as their 12th canon in the "Code of Ethics":

"The healthy expansion of commerce and credits, with due regard to the preservation of their stability and healthfulness, demands an exact honesty in all of the methods and practices upon which they are founded. Advertising is an important feature in business building; it should represent and never misrepresent; it should win reliance and never cover deceit; it should be the true expression of the commodity or service offered. It must be deemed, therefore, highly improper and unethical for advertisements to be so phrased or expressed as not to present real facts, and either directly or by implication to mislead or deceive. In this department the finest sense of honesty and fairness must be preserved, and the right relations of men with one another in commerce and credits sedulously maintained."

However if you cannot, will not, police yourselves, the public will not suffer for long, for we see rapidly coming to the front great corporations, some of them cooperatively owned, others privately owned which realize the value of letting their labels stand for a certain quality, and which are rapidly controlling the production of certain varieties of fruits, especially the California fruits and some vegetables. These people are now so strong that your inspection labels would mean nothing to them. But should you of the East and the South and the West, and central states, with your multitude of small canneries scattered throughout all of the states east of the Rockies, have succeeded in your plans, you would have those wonderfully organized industries of California either imitating you or joining with you.

What You Should Know About Pumpkin

By WINIFRED STUART GIBBS

A SOCIAL worker tells an amusing story of a small boy who as a member of the malnutrition class in school was a source of much anxiety to his mother. One day the mother was advised by the school dietitian to see that the little boy had plenty of spinach; whereupon she fixed the dietitian with a desperate eye and wailed:

"My God, Miss Blank, ain't there nothin' that child can eat 'cept spinach? Every doctor and nurse and teacher hollers 'spinach,' and now you're doin' it too."

Whatever reply the dietitian may have made to the distraught mother, we are reasonably certain that she furnished her with a list of substitutes of alternates, and if that list was complete pumpkin had a place on it. Dietetics is a wonderfully exact science and at the same time entirely flexible. Probably that particular little boy did need spinach and needed it badly, but the point is that there are other vegetable foods that help to keep the diet well balanced.

One of the chief reasons why the little boy needed spinach was because of the lime content, and pumpkin is one of the lime foods. In fact, it compares favorably with spinach both as regards lime and phosphorus, the two minerals which are responsible for sound teeth.

Nor is the only service rendered by pumpkin to the cause of good nutrition.

Foods that enter into a well balanced diet may be likened to partners in a business, each one of whom has a special office to perform, something that he individually can do better than any of the other partners.

So it is with foods; true, they work also in groups, several being "specialists," if we may continue the figure, in the same line.

In this connection there are groups of foods that form acids in the blood, and certain other groups that form the opposite of acids, or, as the chemist calls them, "bases." Both acids and base-forming foods are necessary; either group may do harm if eaten to excess.

So here we come to the part played by pumpkin in this business of helping the other foods to keep the blood just right, a nice balance between acid and base.

Pumpkin, then, has a base-forming power that is appreciable. In this it shares honors with the potato. Meats form acids, potato, pumpkin and some other foods the opposite, which is one of the reasons why "meat and potato" go well together, and why pumpkin pie is a good dessert to follow roast turkey.

Other Mineral Salts in Pumpkin

A decade or more ago the food specialists were apt to be satisfied with a diet that yielded the three "principal food elements, protein, fat and carbohydrate." Today we know that there are other considerations that must be taken into account before we can pronounce any diet "well balanced." One of these is the amount of mineral salts represented. We have already spoken somewhat at length in regard to one of these mineral salts, that is lime. There are others, however, almost equally important, and pumpkin holds its own with the best of them when it comes to furnishing magnesium, sodium, potassium and several other salts.

Composition of Canned Pumpkin

It will be of interest to compare canned pumpkin with the raw product, by way of estimating the higher concentration.

Canned pumpkin is .8 per cent protein or body building material, as against .5 per cent in the raw vegetable; it is .2 per cent fat as compared with .1 per cent; carbohydrate or energy giving elements are present in canned pumpkin to the extent of 6.7 per cent, while raw furnishes only 2.6 per cent. The important minerals which we have already discussed show .7 per cent in canned pumpkin and only .3 per cent in raw. Finally, in a pound of canned pumpkin there are 144 calories of energy, while in raw we find but 59.

This is a sound argument for canned pumpkin as saving effort and fuel and giving more food per pound.

Paper read before Pumpkin Section National Canners' Association.

Canned Foods 20 Per Cent of Chain Store Sales

By HENRY KOHL

President National Chain Store Grocers' Association

Address of President Henry Kohl of the National Chain Store Grocers' Association, at the Annual Convention of the National Canners Association, January 22nd, 1923.

The National Canners' Association represents a branch of the food trade in which the chain store grocer is vitally interested and concerned. Canned foods represent about 20 per cent of our business and as your association has been directly responsible for making canned foods more wholesome, palatable and attractive, your industry will naturally develop greater possibilities.

We are living in an age of evolution in both manufacturing and distributing. Since you, the manufacturer, can supply food products of exceptional quality in attractive form, at a less cost than the good housewife can prepare them at home, to say nothing of her trouble involved and the danger of botulism, your industry will continue to be the means of more pleasant housekeeping effort, while we, the chain store grocers, if I may say it with due modesty, can deliver your product to the ultimate consumer at less expense to both you and the consumer than any other channel of distribution. Our very frequent stock turnover makes it possible for us to always display your products in the same fresh and attracive condition as they are received, and you all know that canned foods occupy a very important place in the chain grocery store.

The membership of the National Chain Store Grocers Association represents most of the responsible and prominent organizations in the United States, and is therefore equipped to co-operate with you in any effort which may tend to assist in the distribution of your various commodities. During Canned Goods Week last March, we made special effort to display and attract attention to canned foods. We shall be glad again to do so next March in a spirit of cooperation, and further to educate the consumer to the wholesomeness, quality and economy of canned goods.

There is no branch of distribution which comes in closer touch with the consumer than the chain store grocer, and as you pack the products which we distribute it is up to you to see to it that a high standard of quailty is always maintained and thereby assist in an increased consumption of canned foods.

EDITORIAL

Prohibition of Filled Milk Recommended by United States Senate Committee

THE National Dairy Union is appealing to its members to urge their representatives in Congress to get behind the filled milk bill (H. R. 8086) and put it to a vote before the final adjournment of Congress early in March. The National Dairy Union is not very confident that the measure will be passed at this session as the large volume of other legislation confronting the two National legislative bodies will leave little time for any but purely Administration measures in the last few weeks of the session.

Both sides in the filled milk controversy have presented the most eminent professional opinion as to the merits or demerits of the product. The Committee on Agriculture and Forestry of the United States Senate, after exhaustive hearings, has recommended the passage of the bill, with some modifications in the form in which it was presented in the House by Congressman Voigt.

One important amendment to the bill inserted by the Senate committee is that the definition of filled milk shall not be construed to include "any distinctive proprietary food compound, not readily mistaken intesta for milk or cream or for evaporated, condensed or powdered milk or cream, provided that such compound (1) is prepared and designed for feeding infants and young children and customarily used on the order of a physician; (2) is packed in individual cans containing not more than 16½ ounces and bearing a label in bold type that the content is to be used only for said purpose; (3) is shipped in interstate or foreign commerce exclusively to physicians, wholesale and retail druggists, orphan asylums, child welfare associations, hospitals, and similar institutions and generally disposed of by them."

The Senate committee goes further than the original bill in defining filled milk very explicitly as "an adulterated article of food, injurious to the public health, and its sale constitutes a fraud upon the public."

APPARENTLY the Senate committee bases its findings as to filled milk being an adulterated food largely upon the language of the Pure Food and Drugs Act, which says that an article of food shall be considered adulterated "if any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, or "if any substance has been substituted wholly or in part for the article," or "if any valuable constituent of the article has been wholly or partially abstracted" and shall be considered misbranded "if it be an imitation of or offered for sale under the distinctive name of another article."

The manufacturers of filled milk have claimed the right to manufacture it because their products are put out as compounds under their own distinctive names, such as "Hebe," "Carolene," "Majal," "Nutro," "Enzo," "Niko," etc., but the Senate committee claims that these compounds are put up in the same size and style of cans as the genuine evaporated or condensed milk and carried by dealers on the shelves side by side with the "genuine product." The committee reports that it received evidence that many dealers advertised it as "Hebe milk," "Silver Key milk," etc., and this is claimed to be a violation of the Pure Food and Drugs Act.

ONE of the greatest dangers in the marketing of filled milk, according to the committee's report, lies in the bulk sales. When used in hotels and restaurants and for the making of ice cream, the consumer has no means of knowing what he is getting, and it is stated that a label could not protect against fraud in such a case.

The committee goes fully into a review of the testimony it heard relative to the lack of vitamins in filled milk and it supports the view of Dr. E. V. McCollum of Johns Hopkins University and other experts as to the importance of milk in the diet and the lack of any suitable substitute.

"There is no claim," says the committee, "that the product (filled milk) is in itself unwholesome. If used by the consumer in limited quantities, with an exact knowledge of its deficiences, there would be little harm in its use. But we fear that such a condition does not obtain in practice, and are convinced that the use of the compound, as it is and will be sold, unless protected, is injurious to the public health."

THE committee dismisses the claim of the filled milk manufacturers that they afford a market for the farmer's skimmed milk as not "well founded." Even if this claim could be substantiated it would, in the judgment of the committee, be no justification for its manufacture. The evidence before the committee is said to have shown that the skimmed milk used in filled milk should be used within an hour of the separation process and this is declared to be impracticable due to delays in transportation. Opponents of the Voigt bill, the committee states, were unable to demonstrate any uses for the compounds which were different from or additional to the uses to which whole milk, either fluid or in powdered form may be put.

"There is no purpose for which filled milk is used where evaporated or condensed milk will not do as well or better," says the committee. "The genuine article can be obtained in any store which carries the compound. There is no shortage of evaporated milk. As to economy, it appears that in hundreds of stores in the country the filled milk was sold for the same price as the evaporated, sometimes even at a higher price and sometimes at a slightly lower price. Even if it is conceded that the filled milk is sold cheaper, there is no economy because the buyer at the reduced price is not getting his money's worth."

Mr. Ladd of North Dakota, who submitted the report, comes from an agricultural section and naturally shows a leaning toward the dairying industry. He declares in his final paragraph:

"The civilization of our country is dependent upon the dairying industry. We should do everything possible to encourage it. We need it to preserve the fertility of our soil, and the time to prohibit the filled milk traffic is now, before it has done greater damage to our health or to one of our basic and indispensable industries."

FOOD AND HEALTH EDUCATION

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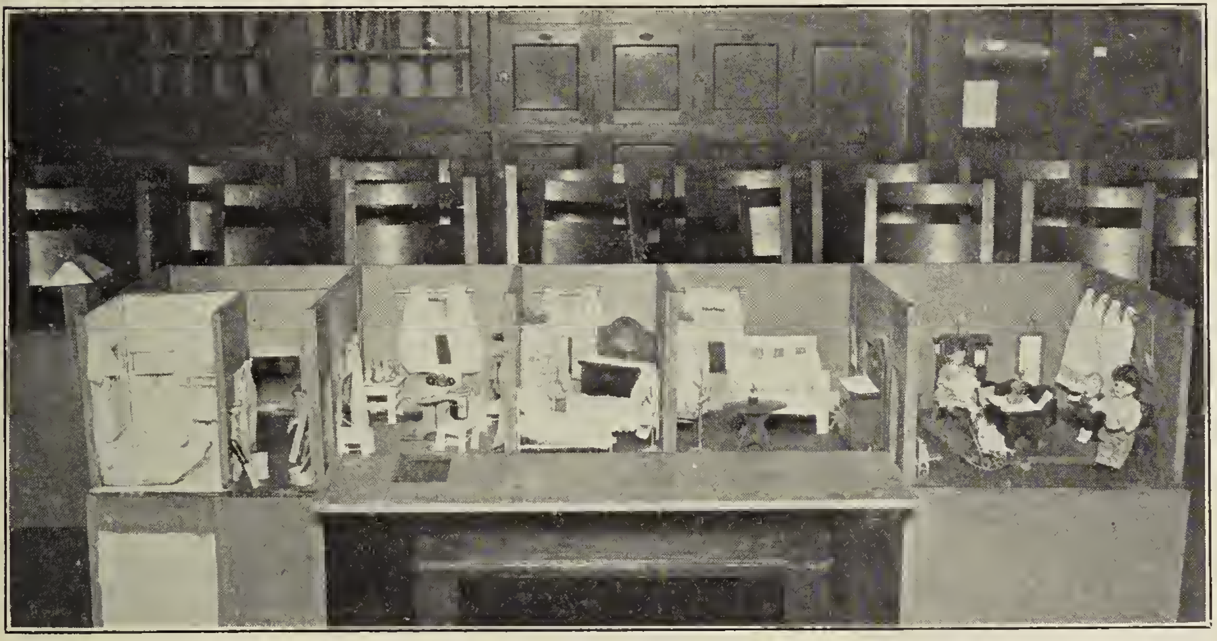
Health Work in Summer Play Schools

Methods of Child Study Federation in New York City

By CAROLYN HOWE MERRIAM

Director of Health Work, Federation of Child Study, New York City



In the course of developing the health work of the New York summer play schools, the Federation for Child Study, Mrs. Merriam has perfected a number of projects that have great possibilities for adaptation. Teachers of domestic science and health in the grades or in the field are certain to be interested in reading of this work. We have asked Mrs. Merriam to outline her work in general and to describe, somewhat in detail, one of her most successful projects.

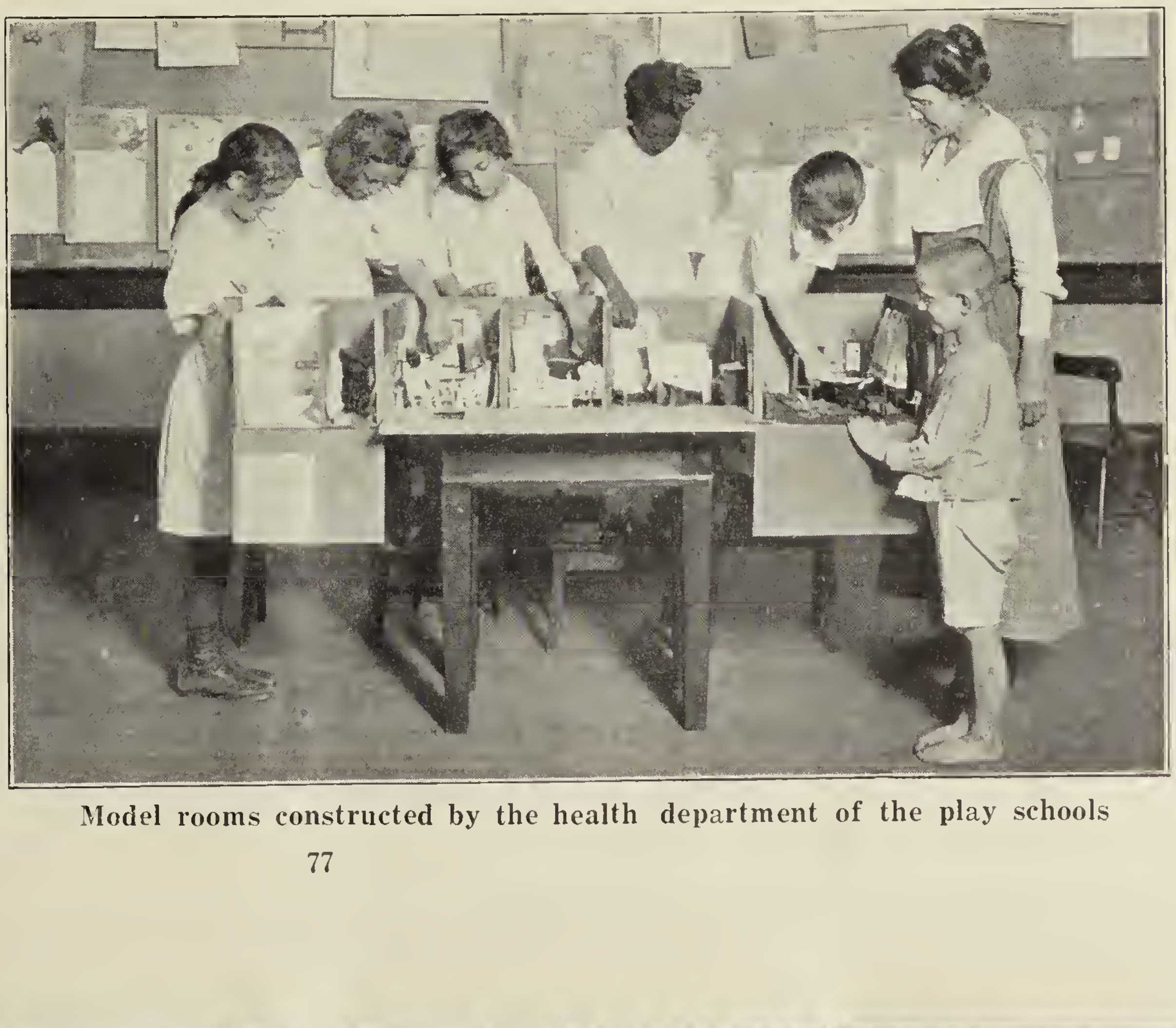
THE children who are to have the benefit of the New York City summer play schools are selected from the crowded districts of the city. They are for the most part below the health and weight standards as established by authorities in these matters. The work as a whole includes a number of departments or divisions, the activities of the health work being the subject of this paper.

Preparatory health work for the summer of 1922 was begun in May of that year. Preliminary selection was made by the health worker after carefully planned home visits, the medical examinations and subsequent conferences of the medical advisory staff being the next steps.

It has been the aim of the Health Department to teach hygiene and to encourage proper health habits throughout the entire school.

Underweight Children in Special Class

After the summer work was well organized thirty-six of the underweight children were chosen for the health class, which assembled once a week on Monday morning. This group received



Model rooms constructed by the health department of the play schools special instruction in hygiene, the choice of food and in home habits. The children were weighed each week, while members of the other classes were weighed only once every fortnight. Health plays, drills, songs and stories were features of the work. The average gain per child was 1.7 pounds.

The general work included instruction in selecting well-rounded meals followed by a rest period, the "home type of service" being followed at the noon-day luncheon (see accompanying illustrations).

The Home Beautiful

BY way of leading up to the supervised construction of "The Home Beautiful," a model of each room in a well planned house, the health director gave a simple history of how homes came to be. The habits of the Indians, who constructed homes under the most primitive conditions, were described, as were also the dwellings of pioneer settlers. The story was brought down to the present time, when crowded conditions make the observance of health rules of ever increasing importance.

Each meal was followed by a rest period when the children relaxed on cots in a well-ventilated room. During this hour they were in charge of a teacher who saw that quiet was maintained.

Great care was taken to teach the children to plan and construct a model truly representing a home which would be within the means of the average New Yorker.

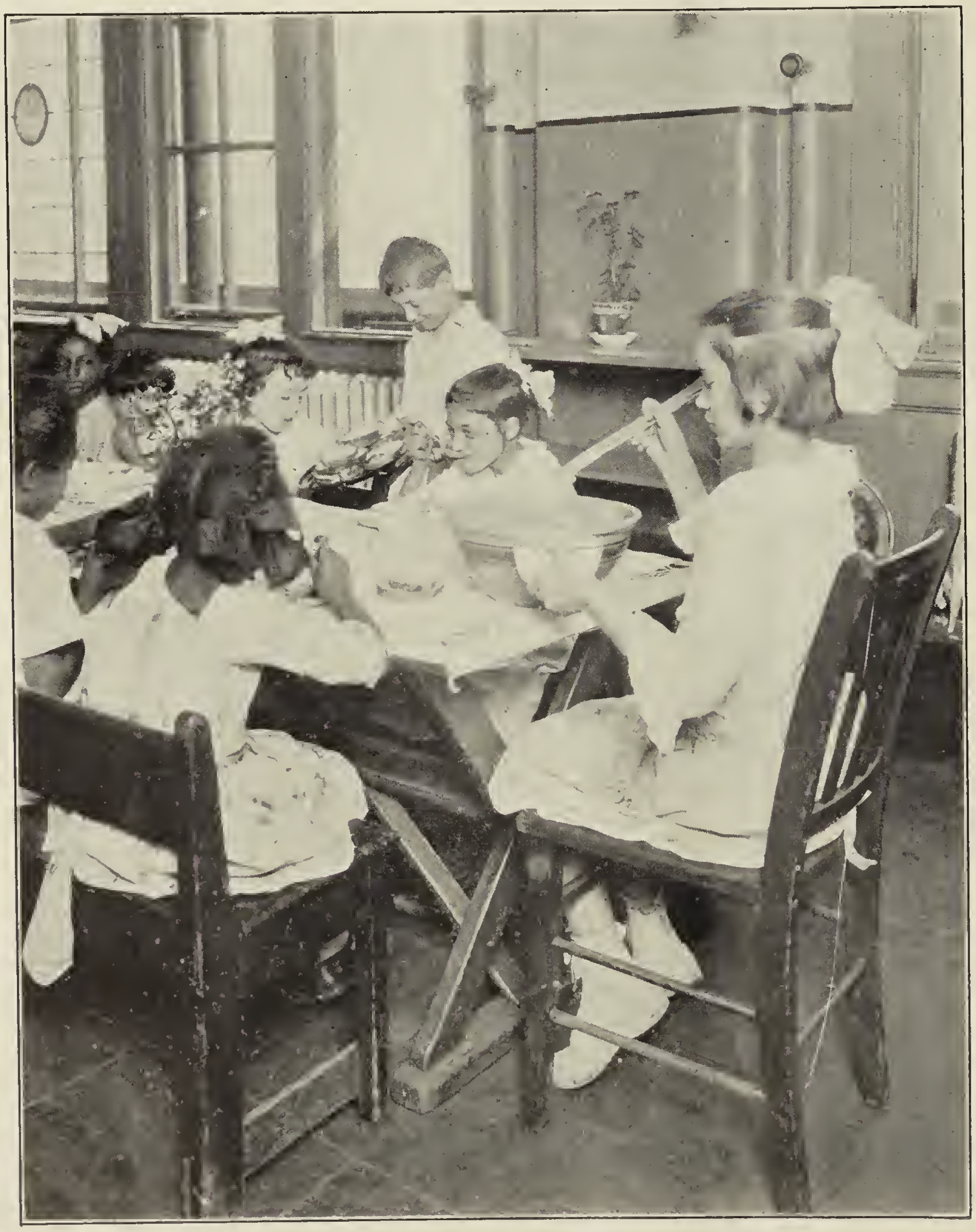
An accompanying illustration shows the details of the model, each room being arranged as nearly as possible according to the laws of health.

Lessons were given room by room. For example, before the talk which used the diningroom as the central point, the children made posters to illustrate the value of cleanliness, cheerfulness and dainty surroundings. When the day of the lesson came the children gathered around the model of the Home Beautiful and listened to the health director, who called attention to the various points which had been taken into account when making the model.

It is not too much to say that when the session was over the children had a good idea of the place of each room in the health of all members of the family. The diningroom, even if necessarily combined with the livingroom and the kitchen, stood for good food, well prepared. The bedrooms emphasized the importance of rest, the bath room of cleanliness.

A Plan Worth Adopting

Teachers of domestic science and health will find it well worth their while to adapt the idea to their own class rooms, since the model home is capable of serving as the starting point for any number of projects. It appeals to the play spirit as well as to the home instinct and is an excellent method of presenting to young children the facts of nutrition, health and efficiency.



The "home type of service" taught the children to serve and eat correctly

Appealing to the Child's Imagination

How the Plans of the American Child Health Association Have Been Developed to "Get Over" Health Rules

By GRACE T. HALLOCK
American Child Health Association

CHO CHO Says
THESE ARE the RULES of the GAME

A full bath more than once a week.

Brushing the teeth at least once every day.

Sleeping long hours with windows open.

Drinking as much milk as possible, but no coffee or tea.

Eating some vegetables or fruit every day.

Drinking at least four glasses of water a day.

Playing part of every day out of doors.

A bowel movement every day.

(Courtesy of the American Child Health Association)

"I DON'T want any old cereal," said Bobby, pushing his bowl away.

"Once upon a time," began his wise young aunt, "there was a little girl named Goldilocks. One day she went for a walk in the woods. And what should she find but—"

"A little house," broke in Bobbie.

"She opened the door and walked in, and there upon the table she saw—"

"Three bowls of porridge," shouted Bobbie.

"She tasted one, and said, 'Oh dear me! This is too hot.' She tasted the next and said, 'Oh dear me! This is too cold.' But when she tasted the third," chanted the young aunt, picking up the spoon and putting it in the porridge, "it was just right," finished Bobbie, "so she ate it all up."

And he did!

If a Frenchman didn't understand English and wanted to ask an Englishman to do something, he would employ an interpreter. Grown-ups are often in the same position when they try to make children do the things that are good for them. They cannot speak the child's language and yet they expect to be understood and obeyed. Imagination is the interpreter who must be called upon time and again when the grown-up talks to the child.

Rules of the Health Game

The Child Health Organization of America (now incorporated in the American Child Health Association) appeals to the child's imagination, in its campaign for healthy children, by calling the fundamental health habits the rules of the Health Game. Every game requires a judge and so Judge Scale immediately stepped forward as a candidate. Who could fill the requirement better than he? These are the qualifications he presented:

First—The relation of a child's weight to his height and age, together with his rate of gain in weight and height, are reliable indices of his health. Therefore the scale can judge as to whether the child is playing the health game.

Second—Children love to weigh themselves, and their interest is especially roused when the weighing has a definite motive. Thus do the scales act as a stimulus to the child's imagination.

These qualification could not be surpassed and Judge Scales was unanimously elected to the bench. "Scales in Every School" became the slogan of the Child Health Organization.

The school is the place where the practice of health habits can most surely be made a part of the child's daily life. The school is the natural rendezvous for the three essentials of health education. There, knowledge, imagination and practice meet each other and work together for the good of the child.

The facts taught to children about health must be easily translatable into the desire to be healthy. In this process imagination acts as the interpreter.

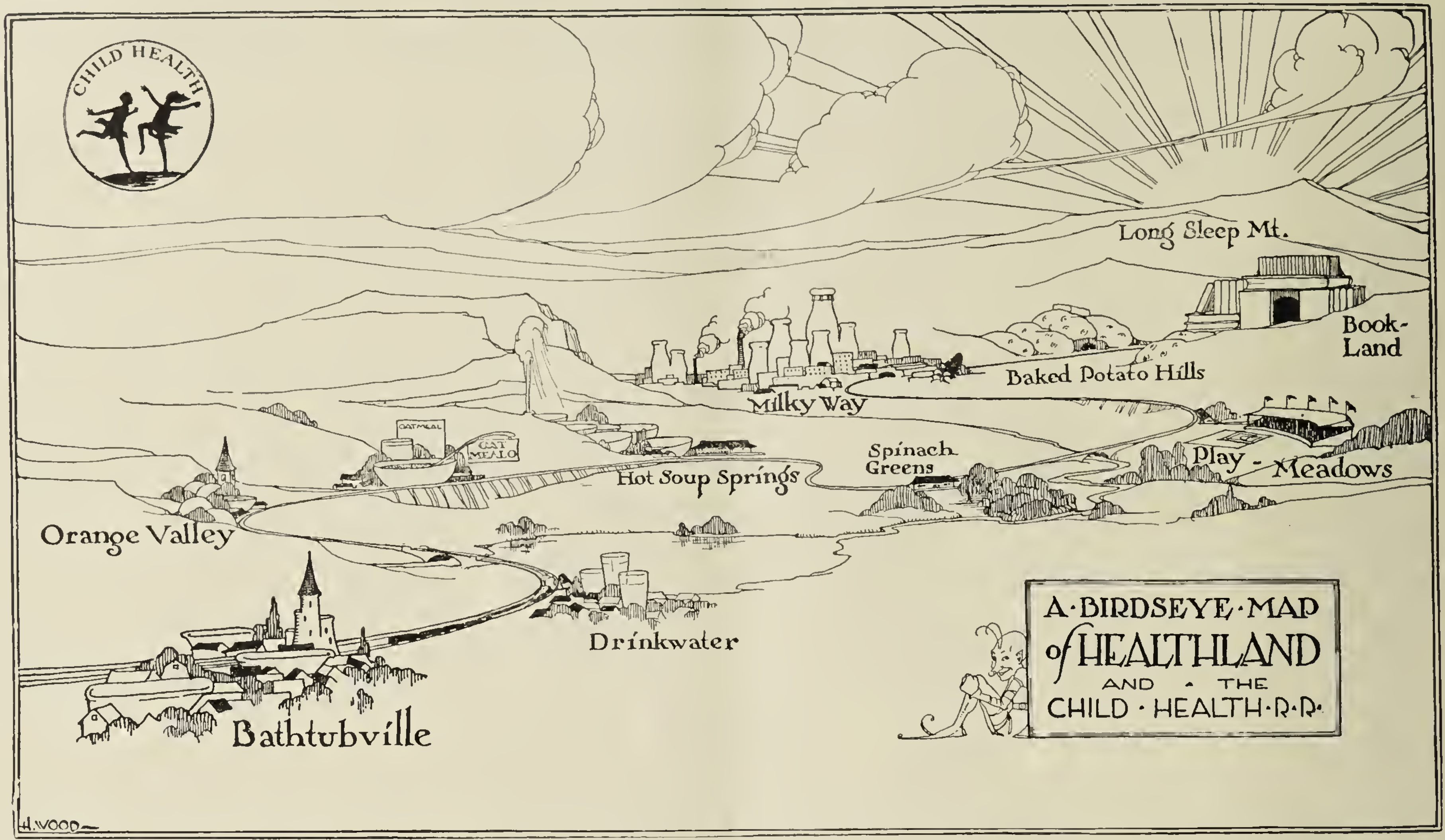
Teaching the Value of Milk

As an example, take the subject of drinking milk. The child is taught in school a great many facts about milk; but knowing the composition of milk, or even being told that milk is a perfect food, seldom makes a boy want to drink it. The facts do not spell "I want it" to the child because they are written in a language that he doesn't understand. Now here comes imagination, the interpreter, to the rescue. He can think of hundreds of ways to translate facts into the language of childhood.

In a "Message to Boys and Girls," copyrighted by the Child Health Organization of America, imagination says to the children: "Milk has a power beyond all other foods to build strong bodies for boys and girls. Every time you drink a glass, you are really setting to work magic little carpenters, who are expert body builders." Then the message goes on to say that these carpenters are protein, the muscle builder; lime, the bone builder, fat and sugar, the warmth and energy builders and vitamines, the mysterious carpenters who work as if by magic. "In order that these helpful little builders may give you their full share of work, you must drink at least a pink of milk a day."

Thus knowledge comes to the children in the language that only they and imagination, the interpreter, can understand. A glass of milk is not just so much protein and carbohydrate and fat and water that disappears in the mouth and is never heard of again. It becomes suddenly alive with magic little gnomes, ready to fly at a moment's notice, here with a bit of red for pale cheeks, there with a bit of fat for skinny legs. These carpenters help Tom to get to first base before the ball does. They lend Mary wings for the relay race.

For older boys and girls, imagination has translated facts into a description of a delectable country called Healthland. In the Healthland Flyer



Folder, copyrighted by the Child Health Organization, the schedules of trains to that country are given, as well as other information for tourists. Here are some of the translations of facts into descriptions of the towns and cities of Healthland:

Milky Way, "Model City" and capital of Healthland, is historically noted as the battleground on which the Coffee King was defeated. It is situated in the richest agricultural and mineral district of the country, and exports annually tons of lime, fat, sugar, mineral salts and other valuable products.

Spinach Green, chiefly known for its iron deposits and its salubrious climate. Mothers bring their families here, as it has long been noticed that children grow more rapidly and increase in weight in Spinach Green and its neighboring villages, **Beet-Top Hill**, and **Lettuce Woods**. For this reason, it is fast becoming a centre for sports.

Baked Potato Hills, celebrated chiefly for its starch mills and iron and potassium mines. Favorite residence district, situated on Butter Creek.

Long Sleep Mountain, the highest peak in Healthland, towers from nine to ten hours above sea level. From this point, the tourist can look out over Dreamland, which drifts "like a castle in midocean."

These are only two instances of the way in which imagination works. The publications of the Child Health Association serve only as suggestions to teachers and health workers all over the world. Literally thousands of methods of gaining the interest of children in the practice of health habits have been developed during the last three years, through posters, plays, stories, rhymes and games.

Health is correlated with the regular school work and speaks to children in the imaginative language they understand.

Supplementary Reading for Domestic Science Teachers

TEACHERS interested in securing supplementary reading of varied nature for use in the class room may find many interesting features in a weekly service entitled "Our Family Food," which The American Food Journal is furnishing to approximately forty newspapers in the country.

The service consists of a page of popularly treated scientific material on phases of food and nutrition.

Among the features are: "The Children's Corner," containing illustrated verses and songs, each teaching a definite food lesson; "Adventures of the Fedwell Family," a series of lessons in story form; "The Story of Foods."

The papers are:

The Item, New Orleans, La.
The News, Cleveland, Ohio.
Free Press, Detroit, Mich.
Herald, Bellingham, Wash.
Southwest American, Ft. Smith, Ark.
Times, Trenton, N. J.
Chat, Brooklyn, N. Y.
Evening Herald, Fall River, Mass.
Morning Star, Rockford, Ill.
Leader-Republican, Gloversville, N. Y.
News, Canton, Ohio.
Daily Courier, Camden, N. J.
Daily Press, Utica, N. Y.
Press-Guardian, Paterson, N. J.
Times-Herald, Dallas, Tex.
Journal, Jersey City, N. J.
Union-Star, Schenectady, N. Y.
Evening Press, Muncie, Ind.
Evening News, Buffalo, N. Y.
Evening Star, Saginaw, Mich.
Times, Los Angeles, Cal.
Republican, Santa Rosa, Cal.
Blizzard, Oil City, Pa.
Journal-World, Lawrence, Kan.
Press-Union, Atlantic iCty, N. J.
Light, San Antonio, Tex.
Advertiser, Elmira, N. Y.
Democrat & Chronicle, Rochester, N. Y.
Journal-Work, Racine, Wis.
Times, Chester, Pa.
Dispatch, St. Paul, Minn.
News, Des Moines, Ia.
News, Beaumont, Tex.
Morning Sun, Binghamton, N. Y.
State, Columbia, S. C.
Post Telegram, Bridgeport, Conn.
Press Herald, Portland, Me.
Courant, Hartford, Conn.

SPEAKING as the first woman to address the Association for the Advancement of Science on the development of its policies Mary Austin gave it as her opinion that the highest possble service that association could render would be to assist in formulating new ways of making scientific truths available to the human race.

Is not this the very thing which the teacher of domestic science and health is doing?

One State Supervisor of Home Economics writes:

"I feel the need of home economics teachers furnishing grade teachers with the fundamental nutritional facts for use in their classes."

Readers of Food and Health Education therefore have an opportunity to exchange experiences among themselves, and the even larger opportunity to "help in formulating new ways of making scientific truths available" to the grade teacher, and indirectly, to the coming generation.

Suggestions to Teachers Regarding Sources of Material

A Selected List of Reading Matter Dealing With Food and Nutrition to be Obtained from Educational and Public Health Organizations and Food Manufacturers

MATERIAL FROM EDUCATIONAL AND PUBLIC HEALTH ORGANIZATIONS

"Food Selection and Meal Planning." Set of eight charts prepared by Caroline L. Hunt, United States Department of Agriculture, Washington, D. C. Illustrated, showing graphically the chief food groups, with the quantity of each required by the average family for a week's supply.

"Nutrition Bibliography." Compiled by the New York Nutrition Council. Published by the New York County Chapter of the American Red Cross.

"Good Nutrition and Adequate Food Allowances for the Family." Discussion of methods for determining the minimum adequat food allowance, giving 1. Economical diets; 2. Average price of each food; 3. Weekly food allowances for individuals of different ages. Prepared by the New York Nutrition Council.

"Height and Weight as an Index of Nutrition." A study of data on the subject of measurements and weights of undernourished school children. Prepared by the New York State Nutrition Council.

"The Peptomist." A paper published by the Junior Virginia Society for Home Economics Education, Apple Grove High School, Richmond Virginia. A students' paper, the January issue featuring school lunches. Miss Ora Hart Avery, State Supervisor of Home Economics, is in charge of the work in the various schools.

"Food Values; How Foods Meet Body Needs." By Emma A. Winslow, United States Department of Agriculture, Bulletin No. 975. The purpose of the bulletin is to show graphically facts that are usually presented by means of figures and precentages.

"Almanac, 1923." Louisiana State Board of Health. An attractively printed pamphlet giving much helpful information on the subject of factors other than food that enter into good nutrition.

MATERIAL FROM FOOD MANUFACTURERS OF INTEREST TO TEACHERS

EDITOR'S NOTE—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of FOOD AND HEALTH EDUCATION will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For ease in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this publication, which will forward the requests to the companies. The list of material presented herewith has been carefully selected, after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **"Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely t prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition, articles on hygiene suitable for supplementary reading, etc.

3. **"Vitamins in Canned Foods."** A carefully prepared bulletin discussing the problems of processing as they affect the stability of the vitamins A, B and C.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5. **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their Importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better With Leaf Lard."** Small pamphlet giving generol directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A phamplet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

Topics for Discussion Proposed by Teachers

Editor's Note—Will not readers of Food and Health Education let us hear from them whenever they have problems which they would like to have discussed? The topics suggested this month are as follows:

Editor, Food and Health Education:

I should like to know the views of other teachers in regard to these questions:

1. The age at which school children may be assumed to become self reliant in matters relating to nutrition.
2. What are some new methods for freshening the old yet vital truths about health?
3. How best shall we hold the children's interest after creating it?

These are a few of the problems I am meeting and I should welcome the ideas of other health workers.

(Mrs.) Carolyn Howe Merriam,
Health Director, Federation
for Child Study, New York.

Acknowledgement

Credit should have been given for certain material which appeared unsigned in the January issue of the American Food Journal.

The authors of this material are as follows:

"The House That Health Built," Sarah E. Bower; "A Day in a Girl's Life," Lillian Bennett, Edna Lotridge, Anna Shepard.

Assembly Programs on Health

Plans Developed in a New York Public School for Teaching Food Values to Children

By NELLIE M. WIGHT
Cooking Teacher, Public School No. 46, Borough of Manhattan, New York

To help spread the knowledge of "Good Health Rules" in general and of "Good Food Habits" in particular, the cooking department of our school has presented at various times, in assembly, programs pertaining to these subjects, based on the work taught in the school kitchen. It has been the policy of the school to make these exercises short (not more than thirty minutes); to have the numbers educational but to present them in a light, entertaining manner to hold the interest of the youthful audiences. Whenever feasible the boys have been asked to take part.

Instead of giving a general survey of this work the writer has selected three original numbers of one program and will give them in full, with explanatory notes concerning each.

OUR DAILY BREAD

NOTE—(This number was delivered by a girl who illustrated her talk by exhibiting real food when practicable, otherwise charts with pictures of the food discussed. Time necessary for this number was six minutes.)

Everybody knows that in order to live, food is vitally necessary, but many do not realize that people must eat the right kinds of food to be at their best and to work efficiently. Many families are poorly nourished, not because they do not spend enough money for food, but because they do not get the right food value for the money spent. The body needs various food materials and these materials are found in the different kinds of food. For convenience these foods are divided into groups.

First and most important is milk. If children will drink just plain milk it is easy for mother, but some children do not like the taste of milk; those children may have it in the forms of cocoa, cream soups, puddings and ice cream. Milk contains so many body-needing materials that every child ought to drink at least one pint a day.

Group II is the cereal group as oatmeal, rice, bread and macaroni.

I know you will like Group III—see my basket, doesn't it make you hungry? This group consists of fruits and vegetables: oranges, apples, spinach and carrots.

Group IV is made up of fats and oils: butter, butterine, olive oil and cottonseed oil.

Foods from these four groups are all that are necessary; there are two other groups which we may eat in moderation:

Group V—Meat, fish, eggs and cheese.

Group VI includes the various forms of sugar, brown sugar, molasses, jelly and dates.

Perhaps you are a little confused after seeing so many foods at one time, so before closing I shall show you a meal illustrating the four necessary groups: milk (plain and in a soup), bread (a cereal food), prunes (a fruit), and butter (a fat).

SUITABLE SWEETS FOR CHILDREN

NOTE—(A girl demonstrated this number. She exhibited samples of the sweets mentioned. Time—8 minutes.)

You have been told that while sweets are not a necessary food, if eaten in moderation they do no harm; also that molasses and brown sugar are the most wholesome forms of sweetening for children. I have brought with me several samples of simple sweets which I have made.

These puffed rice balls and lollypops are both brown sugar products, easily made and not at all rich—much better for children than the rich bon bons and chocolates. Drop cookies and cup cakes are also easily made, are tasty and not likely to cause trouble with little "tummies." I have some old-fashioned molasses cookies which I am going to show you how to make. The family-size recipe makes eighteen cookies, but I shall make only one-third that quantity today.

(Demonstrates) For this number take 1/2 cupful of sifted flour, 1/6 teaspoonful each of salt, baking soda and cinnamon, 1/3 teaspoonful ginger; mix these dry ingredients together. Next attend to the wet ingredients: 1 1/3 tablespoonfuls melted fat or oil, 1 teaspoonful hot water and 2 tablespoonfuls molasses; add the dry ingredients to this liquid mixture and stir until free from lumps. Grease a pan and drop the dough by spoonfuls onto this pan, about one inch apart.

We have no oven so I cannot bake them, but I shall tell you about testing the oven. Heat it with the gas on full for five minutes, then turn the gas down to about 1/3 the normal flow. Place a piece of white paper (hold up) on the rack in the oven and if at the end of three minutes the paper is a golden brown (hold up) the oven is the correct temperature for baking this kind of cookie. It will take about fifteen minutes to bake them; look at them about three times during the baking and if they show signs of getting too brown around the edges, lower the gas still more as molasses mixtures scorch very easily. You can tell when they are cooked through by pressing them down slightly in the middle; if the dough springs back they are done. If you follow these directions the cookies will look like this. (Show the finished product.)

I am sorry there are not enough of these sweets to pass around. If the boys like the looks of them ask the girls who come to the cooking room for the recipes. Maybe they will enclose generous samples with the recipes.

HOW AND WHERE TO OBTAIN INFORMATION ON HEALTH

NOTE—(This number was written and presented by a boy. He obtained his information by attending one of the classes in the cooking room when that part of the work was being discussed. He exhibited various pamphlets, magazines, etc., mentioned in his talk.)

People do not realize how much information on health problems they can collect for little or no cost. I should like to tell you about a few of these ways.

(a) You may apply to your congressman to put your name on the mailing list for leaflets called "Food Bulletins." I have two of these booklets which the cooking department of our school has received from the government. This first book is "Diet for the School Child"—a very interesting book, showing the proper kinds of food for children. The second is "A Week's Food for an Average Family." This book is a great aid to the housekeeper in purchasing the right amount of food for her family.

(b) Another way of obtaining information is from our magazines. Popular Science, a very familiar magazine to most of you, especially the men and boys, contains good articles on health. The Country Gentleman, known to you also, gives instructive data concerning food. Good Housekeeping devotes several pages to the subject of health.

(c) These clippings were taken from the home page of one of our daily papers.

(d) These two booklets were received from life insurance companies. The Child Health Alphabet is a very entertaining and instructive book for our younger brothers and sisters. Mother Goose Health Rhymes—this little book takes the old time "Mother Goose" stories and puts them in modern rhymes pertaining to health. It is also entertaining for younger children.

(e) This last book, Every Day Health Series, was drawn from our local public library.

So you see that untold knowledge is within the reach of everyone, for little or no trouble, but people seemingly do not grasp these opportunities to further their knowledge on health. So I hope, my fellow students, that you will take advantage of this information by procuring some of the books to which I have referred this morning.

As the reader can easily determine for herself, these numbers are by no means finished literary gems but are simply a gathering together of some of the material taught in the cooking classes. It is given in such a form as the youthful orator or demonstrator of ten or twelve years is capable of presenting and it will appeal to an audience of children of that age or even younger.

BOOK REVIEWS

Home Economics in the Elementary and Secondary Schools. By Agnes K. Hanna, formerly of the Home Economics Department of the University of Chicago. Whitcomb and Barrows, Boston. $2.50.

ACCORDING to the preface, Miss Hanna's book is planned as a text book for students in special methods courses in home economics in colleges and normal schools.

Others experienced, however, will find it valuable as it contains discussions of many of the practical teaching problems met in daily work.

One of the points emphasized by Miss Hanna in the present volume is the need of using specific problems for which the students see the need of a solution as the basis of class discussions.

The book treats first of the selection and organization of subject matter, and then proceeds to discuss special courses in detail. Part 2 treats of the status of home economics in the schools, aims, and courses in both elementary and secondary schools.

Our Candy Recipes. By May B. Van Arsdale, Associate Professor of Household Arts; Day Monroe, Instructor in Foods and Cookery; and Mary I. Barber, Instructor in Foods and Cookery, Teachers College, Columbia University, New York. The Macmillan Company, New York. (Trade edition), III, $1.50.

ALTHOUGH the authors of this practical hand book have purposely omitted the discussion of candies so elaborate as to require special equipment, the directions include confections attractive enough to compete with the most distinguished among the family of sweets.

Beginning with an extremely readable discussion of the possibilities of sugar under the application of various degrees of heat, the authors proceed to give explicit and complete instructions for the manufacture of creamy candies, and of hard.

Conversion tables to be used as a guide in purchasing material and descriptions of needed utensils come next and finally, the main portion of the book, that is, large and small recipes for the actual candy making, followed by a chapter on decorative candies and attractive boxes. Perhaps the most distinguishing feature is the variety of recipes

The mere names of the authors place the book at once in the category of authoritative works. Housewife and professional candy maker will unite in prase of its practical help.

Foods of the Foreign Born in Relation to Health. By Bertha E. Wood, formerly dietitian, Food Clinic, Boston Dispensary. Whitcomb and Barrows, Boston. $1.25.

ANY teacher who has wrestled with the nutrition problem as it is related to the nutrition of her foreign-born pupils will welcome Miss Wood's clear presentation of the facts. Dietary backgrounds have a far-reaching influence and Mexican, Portuguese, Italian, Hungarian, Polish, Turkish, Grecian and Jewish families need much friendly help when it comes to adjusting themselves to American diet customs.

That we may best help these new citizens by ourselves becoming acquainted with their own food habits is Miss Wood's thesis. She therefore proceeds to detailed description of such habits, giving recipes for native dishes and many suggestions for adapting the best in foreign dietaries to the conditions of our own crowded cities.

Recipes for Institutions. Collected and edited by the Chicago Dietetic Association, Inc. The MacMillan Co., New York.

MOST teachers of domestic science, whether engaged in institution work or in class room activities have at some time or other felt the need for further discussions of recipes for large numbers. The present collection performs a real service in that it is the work of not one or two but of seventy-five or more dietitians, each one of whom holds a position of responsibility in a well known institution.

Practically every recipe needed to make a complete institution dietary is included in the book and in each case the number of portions is indicated so that the teacher or dietitian using it may easily calculate the quantities required to serve her own particular group.

IN all recipes calling for baking powder, insure successful results by using Royal Baking Powder (absolutely pure.)

It is conceded by domestic science teachers and baking experts the world over to be "the most healthful and dependable baking powder made." Royal contains no alum—leaves no bitter taste.

A New Game Which is Interesting, Instructive and Stimulating

Teacher in New York City Schools Suggests Vegetable, Fruit and Cereal Games for Children Which Teach Them to Think

By MABEL M. ROSE
New York City Schools

I HAVE originated a game which makes the children think, is instructive and emphasizes the good foods for children to eat. It is called "Vegetable, Fruit and Cereal Match." It takes from ten to fifteen minutes. We have played it at the end of a lesson on vegetables or fruits, or cereals. The match is as follows:

The children form in a line and each child announces a vegetable, fruit or cereal in turn, and so on until a child fails to give one, when she takes her seat. This is the procedure until only one girl is left standing. She is the winner. The class applauds the winner. Her name is put on the board in large letters and her name sent to the class teacher as winning the match.

The children enjoy this game tremendously. Several girls have told me it makes them "think" more than anything they have done.

Another game, very much like the above, we have played at the end of a lesson on milk, called "Milk, Cream and Butter Match." In this case the girls name any dish made with any of the above or served with any of the above.

I have also found a simple little game enlivens the laundry lesson during the last ten minutes of the first laundry lesson in 7 B. Each girl puts her name at the top of a paper, folds it once and passes it to her neighbor. Then each girl writes the name of an article used in doing laundry work, folds, and when the word "pass" is announced by the teacher, passes again to the right and so on. After the papers have been passed twelve times, the papers are opened and returned to the girls whose names are at the head of the paper. Lists are read and compared and the best lists are put in the note book for reference. Of course there are some duplicates on the papers but as each girl is instructed not to write the same article twice, each paper has a good list ultimately. The children enjoy it and it has the educational value of making the children think. I have called this game "Hidden Names."

I am reporting these games in case any one would like to try them and perhaps find them of value as I have done.

Note: I have played "Hidden Names" game today with the 8 B girls, each girl writing a fact about milk and passing, etc., the same as in the laundry games. Whenever a girl fails to write a fact about milk (what milk contains, products, use as beverage, etc.) she writes a zero on the paper and raises her hand. The girls hated to confess they could not think of facts about milk and concentrated well. The classes enjoyed this game immensely and want to play it again using another food in place of milk.

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FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Important Considerations in the Relation of Food to Disease

By J. G. GEIGER, M. D., Dr. P. H.
United States Public Health Service; Associate Professor of Epidemiolgy, University of Chicago

IT is to be regretted that this brief paper represents only the utilization of the writer's experience in the problems during the last three years. Again, this experience has been of necessity limited to the study of several factors and conditions which are only more or less related to the problems as a whole. Efforts have been made to get into touch with the membership of the commitee so as to get an expression of their views, but various matters intervened to the detriment of the report.

It is obvious that one must consider the relation of food to disease as direct and intimate. Insufficient food, unbalanced diets, over consumption, improper storage, and understerilization equally influence our morbidity and mortality by producing on the one hand lowered vitality and inability to readily resist disease, and on the other definite intoxications, poisonings and infections. It is not unreasonable to state that we are rapidly passing out of the stage of ignorance regarding diet and the proper sanitation of food with its ever present human contact.

Statement of Problem

Food poisoning in general must have been with us always though the extent is only comparable to our knowledge of the subject, which is meagre to say the least. We can recall our ancient history of the food taster to the king. It may be expedient to recall that the act of tasting food has been the cause of several deaths from botulism in the housewife, presumably in testing its safety. From the early reports one sees a definite idea that food poisoning was regarded as entirely chemical in nature. Admitting that harmful chemical substances may produce such symptoms analogous to those considered typical of food poisoning, in the light of our knowledge of today, it is most probable that all outbreaks are bacterial in character or the result of bacterial metabolism.

One may well ask the question: how does food act as a poisonous and harmful agent, and does its preparation come up to our standards of sanitary science? The first may be summarized and the second left for further consideration.

Briefly, food acts as a poison in the following manner: (a) Poisonous in itself, such as the so-called mushroom poisoning. (b) Because of growth of organisms with which it has been contaminated either in nature or in its preparation. (B. botulinus, paratyphoid group); (c) Because the food may originate from a dangerous source (animal parasitic diseases, anthrax, tuberculosis); (d) Idiosyncrasies; (e) The faulty preparation by elimination of normal substances usually present.

It would seem appropriate to discuss only those phases that are most important to public health agencies. Of these botulism, because of the spectacular and usually fatal outbreaks, can easily be said to lead the list.

Botulism

The clinical symptoms of botulism are fairly well known. It has been shown that the annual number of deaths is very small, averaging in the last ten years less than twenty-five per year. However, over 110 outbreaks in human beings have occurred, of which only 41 have been proven bacteriologically. The spore of B. botulinus is found universally in nature and in greatest abundance in soil that has not been cultivated, especially in high altitudes. It grows readily in all but the acid foods having a Ph. value of below 4.5. Its toxin is destroyed by heat at a boiling temperature but the time necessary for such destruction depends on the size of the container and the consistency of the food. To be reasonably safe, boil the food for 30 to 40 minutes. The spore is decidedly heat resistant, such temperatures as 248 deg. F. for 3.8 minutes; 239 deg. F. for 10 minutes; 230 deg. F. for 36 minutes, 321 deg. F. for 110 minutes; 212 deg. F. for 360 minutes, have been demonstrated by the California Botulism Commission as the minimum time which the most resistant strains of B. botulinus have not withstood.

With these figures in mind, methods should conform to the knowledge gained by years of work. After studying the problem one cannot but admit a feeling of anxiety in the temperature used. There seems to be no excuse for further reliance upon boiling temperatures, frequently used without relation to altitude, for limited periods of time, and neither is it advisable to use sterilization under pressure unless there is a full and complete knowledge of the fill and the heat penetration of the product. Warning is therefore given in the use of the much advertised pressure cookers when such information as the above is not available, and it can be stated without fear of contradiction that under-sterilized foods are always unsafe where botulism is considered.

Sanitation by the thorough cleansing, proper storage and the use of fresh products to be canned is primarily essential as a protection against botulinus spoilage. A system of coding has been suggested and is immediately needed whereby each can is so marked that it may be iden-

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Read before the Food and Drugs Section of the American Public Health Association at the Fifty-first Annual Meeting, Cleveland, October 16, 1922. First published by American Journal of Public Health.

tified with the batch of a small section of the day's run with which it was processed. It should be remembered that it is always possible that B. botulinus may be present and that even cans which show no evidence of spoilage may cause sickness or death. Therefore it is far more important to know in the examination of cans of suspected packs causing outbreaks whether the contents of the cans are toxic rather than to examine for the presence of viable spores of B. botulinus. However, the latter should always be done.

Regarding treatment of the disease, substantial progress has been made in learning the specific nature of the disease and the manner in which the poison acts. Unfortunately no progress has been made in giving relief to patients. Antisera have been prepared by means of which botulism may be prevented in animals when treatment is given immediately after the poisonous food has been consumed. Unfortunately, again, there has been no opportunity to use these cures with human beings until many hours after the symptoms of the disease have appeared and it was then too late.

General Food Poisoning

A study of the mortality statistics regarding food poisoning reveals the interesting fact of a steady increase. The difficulties attendant on this classification as a cause of death indicate to the experienced investigator that these statistics at their best are inaccurate. The complexity of diagnoses, namely, the all-embracing and antiquated term, ptomaine poisoning, the diseases caused by the paratyphoid enteriditis group of organisms, and the usually fatal intoxication caused by B. botulinus make it essential that there should be a regrouping of this classification. The distribution and manufacture of food supplies are of such magnitude that it is absolutely necessary that this statistical increase be regarded with some degree of apprehension. Furthermore, physicians should be taught to scrutinize with great care their diagnoses in alleged food poisoning cases. Likewise, investigators and laboratory facilities should be offered by all health departments. It is a well known fact, but many times disregarded, that the diagnosis of such conditions as are caused by the paratyphoid group is essentially dependent on the isolation and demonstration of the organism. Agglutination reactions of the sera of patients of this group are most unreliable, especially when one desires scientific information as to the type, because of the many co-agglutinins demonstrable accordingly, and the specific reactions in the previously vaccinated individual.

The appearance of such symptoms as abdominal pain, vomiting, nausea, diarrhea, following recent consumption of a meal seems sufficient evidence to classify such illness as belonging to a little known but increasingly prevalent group called food poisoning. This clinical entity is often referred to as ptomaine poisoning, which term originally obtained its wide use from alleged alkoloidal substances presumably produced in certain putrefactive processes in animal products used as food. Fortunately, it is becoming possible to differentiate the cause of such symptoms both from a laboratory and epidemiological standpoint. The isolation of the organism is always necessary whether from the excretion of the patient, or from the suspected food, or from both. However, these important factors are often either ignored or found impossible to be determined because of the limited duration of the illness and the subsequent delayed investigation. Of small groups as in families this is invariably the case, and it is only in spectacular large outbreaks or where fatalities occur that the best results are obtained. This was shown by the intensive investigations begun following the botulinus cases from ripe olives. It could be said that it is far more important to go thoroughly into the causes of general food poisoning as the innumerable cases far outnumber those attributed to botulinus intoxication.

Recently it has been possible to make an incomplete study of data collected in various investigations in cases of supposed food poisoning alleged to have been due to canned foods. Again, it has been possible to check this data by similar investigations also incomplete, and under agencies having access to records of health departments, both local and federal. Comparatively, the summaries represent different and shorter periods of time but conclusions can be drawn with some degree of certainty.

In 147 outbreaks of alleged food poisoning due to almost every variety of food and every source, manufacture and distribution, there was no evidence in 113, and the facts pointed to other diseases and conditions. These outbreaks involved 1,578 people, that is, that number of people claimed to have been made actually ill by the consumption of material as food. Of this number there were 85 deaths are due to other causes than was an outbreak of food poisoning from home prepared bacon, one death occurring in three cases. The fatal case was a paralytic with marked arteriosclerosis. It is not unlikely that symptoms attributed to food poisoning may prove fatal in such a case.

Rightfully assuming that many deaths are due to other causes than food poisoning or botulinus intoxication, the fact that only in four instances were autopsies performed makes these statistics almost valueless. It is more important to state that in every autopsy performed the results were definite, and in three the original diagnoses were completely refuted or changed. In any event the almost complete lack of laboratory examination on either the food or the patient offers important evidence of a public health situation that at the best is deplorable.

Dietary Deficiencies

In 1921 there were in the United States 97,366 deaths from tuberculosis, 2,112 from pellagra, 496 from rickets, 77 from scurvy and 5 from beri-beri. Although we cannot say that tuberculosis is the result of a certain element lacking in the diet, yet the effectiveness of milk and eggs in its treatment makes this disease in part a dietary matter, and it has been suggested—probably without much basis—that the vitamin A in milk and eggs is the primary factor concerned. It is certain that an optimum diet for every individual at all times may assist in its elimination.

A liberal allowance of milk protein in a diet otherwise complete is the only definite cure that has been demonstrated for pellagra, but it is important to emphasize the completeness of the diet in other respects as to supply the milk protein. In fact this deficiency as indicated by Goldberger and Tanner of the United States Public Health Service may be one or more of the amino acids.

The etiology of rickets is a complicated matter, but both hygiene and diet are involved. Scurvy and beri-beri are said to be the result of a lack of vitamins C and B respectively in the diet. It is inconceivable, however, that any diet in the United States can be lacking in but one element such as the antiscorbutic or anti-beri-beri vitamins, except possibly in the case of infants' diets. The point is that we should not aim to bolster up a diet with respect to one element, as a certain vitamin, but that we should aim for a higher plane of nutrition. This can be accomplished by a greater variety, by liberal consumption of milk and eggs, leafy vegetables and less highly milled cereals.

Too much alarm has been created concerning the effect of canning and cooking in the destruction of vitamins. No canning or cooking process appreciably affects vitamins A and B. The same may be said of vitamin C in acid fruits. In vegetables vitamin C is to a considerable extent destroyed by heat. However, the greater part of this destruction occurs at the beginning of the heating period. Therefore, the time and temperature of the cooking or canning process are relatively insignificant.

As far as the vitamin question is concerned we may pursue our individual desires and tastes in determining the relative amounts of raw and cooked foods we eat. The main emphasis is to be placed on variety, chosen from the three main groups: animal products—chiefly milk and eggs; not too highly milled seeds; and vegetables, especially the leafy variety.

The advent of the commercialized products termed "vitamins" has precipitated an advertising campaign to which not only the public have actively subscribed and listened to but many of the medical profession. This propaganda in many instances is a real distortion of the actual facts. The positive guarantees are ridiculous and are not unlikely to give one who takes them as assurance which is far from real. The remarkable healing facilities of the advertised vitamins now present on the market should be not only scrutinized with care by physicians but should be placed certainly within the realms of a doubtful and unproved quantity.

Comments

In connection with investigations of food poisoning cases which have been made during the past three years, one very important point is generally overlooked by attending physicians or health officers, and that is the necessity of confirming clinical findings by laboratory tests of samples of suspected food and excreta. Without such data the record of such outbreaks are of little value, either as indicating the real cause of the trouble, or suggesting how such outbreaks may be avoided in the future. Likewise, it seems to be expedient at this time to point out to all concerned that the trend of legal procedure covering the responsibility in outbreaks of food poisoning is as follows:

A distinction has been made between sales by a wholesaler and a retailer, many of the courts holding that warranty is a contractual relation, and, therefore, an action based on warranty cannot be maintained by a consumer against a manufacturer or wholesaler, with whom he is not in privity of contract. On the other hand, the courts have held that a retail dealer impliedly warrants the wholesomeness of the goods he sells, even though they are in sealed containers and not open to inspection.

Many outbreaks illustrate the fact that the term "ptomaine poison" has been very loosely used in the past, and in defending these cases not enough attention has been given to the exact type of the illness and its relation to the suspected food, both as to the manner in which the food itself was prepared and handled, and the time within which the illness developed. With most of the so-called ptomaine poisoning cases it is necessary to contend with the doctors' diagnoses. The illness is frequently attributed to some suspected food, with no test of the food itself, and without acquiring a very accurate history of the patient's illness, or trying to eliminate other factors which might have caused it.

Coal Tar Dyes We Eat and Drink

By JOSEPH A. AMBLER

Chemist in Charge, Color Laboratory, U. S. Bureau of Chemistry

ONE phase of the use of coal tar dyestuffs which is very little realized is that large amounts of them are used in coloring foods and beverages and that the United States Government has devised a scheme for protecting the public against the use of injurious or impure dyes in this way, by specifying eleven coal tar dyes which are considered in themselves to be harmless and which may be legally used to color articles of food provided they are of proper purity and their use does not conceal damage or inferiority of the product.

Manufacturers of dyes for coloring food may have them certified by the Department of Agriculture by submitting samples of each batch together with affidavits proving their identity and purity. If analysis shows that the batches meet specifications which have been established for food dyes, each batch is given a lot number and is then known as a certified dye. This lot number amounts to a guarantee that the dye is not harmful to health and follows the batch to which it was given through the channels of trade until the packages in which the batch was originally packed are opened by the manufacturer of food products or by the manufacturer of food colors for the purpose of making mixed shades which, in turn, may be certified and then are assigned a lot number of their own. Complete details of this procedure will be gladly furnished to any manufacturer of food colors upon request addressed to the Bureau of Chemistry, Department of Agriculture.

During the fiscal year ending June 30, 1922, there were certified 333,330 pounds of the permitted coal tar dyes and mixtures of them. When it is taken into consideration that the finished article of food contains, as a general thing, not more than one part of dye to five thousand parts of food, it will readily be seen that the American public is consuming food colored with certified dyes at the rate of approximately one and one-half billion pounds per year.

Uncertified dyes may be dangerous for use in food since they may contain objectionable and poisonous impurities, such as arsenic, lead, organic bases and poisonous dyes, the use of which may render the food in which they are employed injurious to health and adulterated under the law. The manufacturer of food products may be sure that he is using harmless colors by buying only those dyes which have been certified.

The kinds of food which are artificially colored with coal tar dyes are so numerous that hardly a person in this country passes a day without swallowing dyes unsuspectingly in such foodstuffs as butter, cheese, cake, candy, ice cream, soft drinks, and even the jackets of the always popular "hot dogs."

Bulletin Issued on Cheese Pests and Their Control

In a bulletin, No. 343, on Cheese Pests and Their Control, E. R. De Ong and C. L. Roadhouse of the Agricultural Experiment Station, University of California, discuss the economic importance of cheese pests, types of cheese favorable to parasitic growth, skippers, mites and cheese flies, the prevention and control of such pests, fumigation and experimental data on fumigation. The bulletin is illustrated with drawings and photographs.

In conclusion the authors present the following summary:

> Cheese skippers and mites attack cheese in almost every part of the world. They are widely distributed in the United States and are frequently reported from the principal cheese-producing states.
>
> The loss caused by these pests arises from: cheese actually eaten, damaged appearance of attacked stocks, prejudiced customers, annoyance to manufacturers and dealers, and the expense of control measures.
>
> Old cheese with broken paraffin covering, greasy shelves, dirty factories, and warm curing rooms favor the development of skippers and mites.
>
> Fresh cheese is seldom attacked by either pest, but infestation may begin during or at any time after the first month of the curing period.
>
> Cold storage of cheese at 30 deg. to 36 deg. F. is the most practical method of preventing loss from either skippers or mites. If cold storage is unavailable the cheese should be marketed while fresh.
>
> Paraffining cheese aids in protecting it from attack if the coating is unbroken.
>
> Fumigation of infested rooms with hydrocyanic acid gas or carbon disulphid is the most efficient method known for controlling both skippers and mites.
>
> Hydrocyanic acid and carbon disulphid are dangerous poisons and should be used only as directed, and if possible, only by experienced operators. Do not leave them where they may be handled by those unacquainted with their dangerous nature.
>
> Fumigation should always be supplemented by a thorough cleaning of the infested rooms and the prompt disposal of all aged cheese.

THE CONFERENCE TABLE

A Means by Which the Manufacturer, Consumer, Research Worker and Educator May Discuss Their Common Problems

By WINIFRED STUART GIBBS

Comments on Our New Department, Food Technology

ABOUT six months ago The Conference Table spread its board, inviting to it representatives of all groups having for their primary interests food and its manufacture and distribution.

Since that time we have had welcome contributions from manufacturers, advertising managers, teachers of domestic science and others.

Throughout this period of getting acquainted with our guests at the Conference Table we have been conscious of an underlying principle govering activities in the food field, whatever may be the individual interests of the various divisions of the field. This principle is concerned with the relation of scientific and commercial problems. Hence, we found it desirable to open a new department devoted to Food Technology. The letters the editor has received in regard to this department show the interest of food manufacturers in coordinating the scientific with the commercial sides of their business. We print some of these letters:

"There is no doubt but that your ideas as outlined in your recent letter are excellent. It seems to us that the biggest problem in any field today is the coordination of the scientific and practical fields. With the great growth of scientific education and research work in this country during the past years the problem of applying the knowledge gained in a theoretical way to the industry most concerned has become more pressing and it is only through publications such as The American Food Journal, which I believe are read widely by both classes, that the necessary interchange of information can be obtained."

H. J. HEINZ COMPANY.

* * *

"In regard to the changes which you expect to make in The American Food Journal, if we interpret your statements correctly you expect to have all the scientific and technological papers grouped together in one section instead of being mixed in with the other matter of the journal, and will also devote more space to such papers than has been done in the past.

"We are of the opinion that this grouping would be an improvement. Also as far as our interest in the paper is concerned the more it contains on food technology the more valuable it will be to us. This in no way disparages articles of a more popular nature from which frequently such information and good practical ideas may be gleaned."

PROCTOR and GAMBLE CO.,
Chief Chemist.

* * *

"Replying to your inquiry asking our opinion regarding a section on Food Technology it seems to us that such an addition to your paper would be very much worth while. However, it is our opinion that this should not be made too technical, but should continue to use the language which would appeal to the layman. We believe that it should not in any way endeavor to cover the field already included in the journals that are solely technical, but that the information should be such as would describe the actual manufacturing problems of the food industry. Such a section would, we believe, increase the usefulness of your journal."

MINUTE TAPIOCA COMPANY,
Research Department.

* * *

"The present technical journals are overcrowded and articles do not appear for many months after they are presented. In our opinion the publication of scientific articles on food technology would be a distinct advance and would add value to the Journal."

MORRIS and COMPANY,
Chief Chemist.

* * *

"The writer appreciates the work that The American Food Journal is doing in acting as a connecting link between the laboratory and the industrial field. Whatever plan is adopted we believe that first consideration should be given to the breaking down of the barrier now existing between the scientist and the layman in the food industry.

"It is believed that a department directed with the above point in mind would be advantageous to the Journal as well as to the scientist and industrial workers."

BEECHNUT PACKING COMPANY.

"I think every manufacturer will be benefited by knowing more in regard to how various products that he uses are manufactured, the difficulties of other manufacturers and how they overcome them.

"I am sure we will be glad to read many of these articles and will contribute articles on the manufacture of our products, yeast, malt extract and vinegar, if you care for them."

FLEISCHMAN COMPANY,
Department of Sales Promotion.

* * *

"I am of the opinion The American Food Journal may most profitably include a section devoted to Food Technology. Whenever we have anything of general interest to contribute to such a section I am sure we should be most glad to do so.

R. B. DAVIS COMPANY,
Chief Chemist.

Topics for Future Discussion

By way of opening the discussions we offer the following, clipping from our valued co-worker in the field of trade journalism, The Bookseller and Stationer, issue of January 15, 1923:

A New Stimulus for Book Sales

Is there any reason why the food manufacturer should not cooperate with the publishers in bringing to the attention of the consumer books of food value and those dealing with dietetics generally? Surely the manufacturer gains by the publicity given to books dealing with foodstuffs, special menus, particularly where definite recommendations for certain products are given. Such cooperation is reactionary. It would help sell more books, and, by the same token, it would help sell the products commended in the books. Why not?

Next month we hope to publish contributions on topics suggested by those vitally concerned in the food industry—the manufacturers themselves.

Meantime, will every manufacturer who reads The American Food Journal send us lists of topics, or problems for discussion? You can do much to help your fellow worker if you will let him share your experiences and even your difficulties.

Consumers Getting Much Impure Vinegar

Senator Armstrong, Counsel of Manufacturers' Association, Gives Further Arguments for Uniform Laws

Editor The American Food Journal:

I HAVE read with interest the views of your correspondents in your January number upon the proposed uniform vinegar law published in your December number and would like, in a general way, to answer those who feel that such a uniform law is either impracticable or unnecessary.

Besides the Federal Government and the District of Columbia, which has a special act, there are forty-eight states with laws or regulations relating to vinegar. There are thus fifty different jurisdictions with very diverse legal requirements.

The Federal Government has a general and very excellent food law and many of the states have food laws patterned upon it, with modifications more or less wisely made, generally the latter. Many of the states have special laws relating to cider vinegar and nearly all of them have dealt with the subject either by statute or regulation with so many different results that the manufacturer is often required to label the same product differently to meet the requirements of different states, and sometimes required to modify pure cider vinegar to meet the special requirements of some states. Without mentioning the states, to avoid insidious distinctions, while some of them have definitions of cider vinegar running all the way from "the legitimate product of apples" up to "the product made by the alcoholic and subsequent acetous fermentation of the expressed juice of fresh apples," the variety of definitions is not only diverse but confusing and often insufficient. They are all based upon the idea that cider vinegar should be made from cider—the expressed juice of fresh apples—but that idea is seldom expressed **precisely** and in **enforceable** language.

While universal custom has prescribed a 4 per cent vinegar for domestic use, one or two states require a 4½ per cent vinegar, and while either the law or regulation requires the kind of vinegar and name and location of the manufacturer to be branded on the barrel, one or more states require it to be branded on **both** ends of the barrel.

Formerly the farmer reduced his cider vinegar by "feeding the mother" with rain water to a strength to which the housewife was accustomed of approximately 4 per cent, but the modern manufacturer now reduces his product to the same strength with water at the conclusion of the process instead of during it, as the farmer did. Most of the states permit this reduction when it is declared upon the label, but some states refuse to permit it, and the result is that the cider vinegar is either condemned as adulterated or the housewife receives a vinegar so strong that it will spoil her pickles or salad without being able by taste or otherwise to determine how far its strength exceeds what she is accustomed to.

Many years ago when less was known about cider vinegar than is now known the Bureau of Chemistry at Washington prescribed a formula which required cider vinegar to be laevorotary, to contain not less than 1.6 gms. of apple solids in 100cc. of which not more than 50 per cent should be reducing sugars, that there should be not less than .25 gms. of ash in 100 cc. and that the water soluble ash from 100 cc. should not contain less than 100 mgms. of phosphoric anhydride which should not require less than 30 cc. of decinormal acid to neutralize its alkalinity, but the progress of analytical science long ago demonstrated that these arbitrary requirements were unreliable and the formula has long since been abandoned by that Bureau. Many of the states incorporated these requirements at the time into either their statutes or their regulations and they still persist, like a Procrustian bed to whose length the occupant must be cut if necessary.

Moreover the purer and better cider vinegar is the less apt it is to comply with all the physical conditions thus required—the modern conclusion being that the ratio of ingredients in pure cider vinegar is much more significant than their quantity.

Some states require cider vinegar to be specially branded as "fermented"; two or three other states require the brand to show the year of its manufacture; some require its source to be stated; others do not; some prohibit coloring; some do not; some have a container provision requiring a label on the customers' container; some do not; some forbid compounds in imitation of cider vinegar; some do not.

Without prolonging this article to unreasonable lengths sufficient has been said to show the evils at which the uniform vinegar bill is directed.

It first defines in simple, precise language the various kinds of vinegar used in this country, with general requirements to insure that they shall be true to name and derived from the sources from which they purport to be, with a uniform acidity of at least 4 per cent. It then purposely omits any arbitrary physical requirements because any competent chemist with the definition and a sample before him can ascertain whether or not the sample is genuine, and the presence of arbitrary physical requirements instead of helping to this end will often hamper his investigation by making some undue or unnatural requirement which made no allowance for the difference in apples from year to year or the difference due to the locality where they were grown or the many other things which influence the quantity of vinegar constituents in apples. Indeed, it may be justly said that many of these arbitrary requirements as they now exist, instead of insuring pure cider vinegar actually require the sophistication of cider vinegar in order to meet their requirements.

Aside from all this the imitation of cider vinegar is one of the most frequent frauds in the food industry. I venture to say that there is as much or more imitation cider vinegar sold in this country every year as there is genuine cider vinegar and the fraud is practiced in selling it all as cider vinegar. In recent years a vinegar made from dried apple pomace, the residuum from the cider mill and from dried skins and cores, the residuum from the evaporator, has been sold in this country by the tens of thousands of barrels as cider vinegar, to say nothing of the compounds made of sugar and distilled vinegars to imitate cider vinegar in color, and colored, distilled vinegar which has also masqueraded as cider vinegar.

I do not wish to magnify the importance of the vinegar industry by insisting that it is entitled to any special legislative consideration but inasmuch as most of the states have deemed it necessary, by statute or by regulation, to deal specially with the subject of vinegar, an argument for a uniform statute embodying scientific definition and logical requirements needs no apology in view of the contradictions, conflictions and difficulties now put in the way of manufacturers by the arbitrary requirements of fifty separate jurisdictions, of which I have spoken above very briefly. If we should attempt to point out all of them in detail, as Commissioner Sullivan suggests, this letter would hardly fall within reasonable limits.

It may be idle, as Captain Rose says, to attempt to make uniform laws upon all kinds of foods because the problem cannot be solved so simply as to many of them, and it may be difficult, as Commissioner Pyrke suggests, to get concerted action, but in dealing with vinegar we are not dealing with a country-wide product, for cider vinegar is only produced in the apple growing sections of this country and a standard pure cider vinegar produced in any part of the country where apples are grown should meet the requirements of every other part of the country.

I think I can with confidence assure one of the Commissioners, whose letter appears in your January issue and who urges that the laws of his state are, he believes, sufficient, that considerably more than half of all the cider vinegar sold in his state is, from evidence we have gathered, not cider vinegar at all, and much of it contains nothing derived from apples at all.

I do not urge that the proposed uniform vinegar law is perfect and should be passed without modification, but I do urge that if a uniform vinegar law upon substantially the lines indicated in your December issue could be passed and enforced in each of our states, many people who never have known the taste and aroma of pure cider vinegar would be enabled to obtain it, and what is more, at a cheaper price than now, because every one of these arbitrary and special requirements either as to physical constituents or branding adds to cost of manufacture and distribution for which the consumer necessarily pays.

The purposes of this association is to promote the manufacture and sale of the best and purest cider vinegar that can be made. We have no other axes to grind except that, and seek nothing except the opportunity for the consumer to buy what he wants and get what he pays for, a privilege which he certainly at present is far from having.

WM. W. ARMSTRONG,
Counsel, American Cider and
Vinegar Manufacturers' Association, Rochester, N. Y.

Filled Milk Bill Favorably Reported to U. S. Senate

THE Voigt "filled milk" bill, which was the subject of lengthy hearings last summer by a sub-committee of the Senate Committee on Agriculture and Forestry, has been favorably reported by the latter committee to the United States Senate and is now before that body for final consideration. The bill, if passed, would prohibit the sale in interstate commerce of "filled milk" compounds.

One amendment to the bill provides for the exclusion from the prohibitive act of "distinctive proprietary food compounds" made and prescribed by physicians for infant feeding. Another amendment reads as follows:

"It is hereby declared that filled milk, as herein defined, is an adulterated food prduct, injurious to the public health, and its sale constitutes a fraud upon the public."

Senator Norris, in his report to the Senate, commented as follows upon the bill and its objects:

"The compound (filled milk) is an exact imitation of evaporated milk in color, consistency, smell, and taste, and the difference between it and evaporated milk can only be ascertained by chemical analysis. The compound can be manufactured for less than half the cost of evaporated milk.

"Your committee does not doubt that the sale of filled milk as at present carried on is a violation, if not of the letter, of the spirit of the Pure Food and Drugs Act.

"One of the great dangers incident to the marketing of filled milk lies in the bulk sales. The statistics for the past year show that the sale in bulk is now on the increase. When used in hotels and restaurants, and for making ice-cream, the consumer has no means of knowing what he gets.

"Vitamines are not produced in the cow, but are found in the food and concentrated in the milk. The human body does not produce them, and must receive then in the food. It follows, therefore, that a nursing mother who does not receive sufficient vitamines in her diet, cannot transmit healthful milk to her offspring. It is a curious fact that all vegetable oils and fats are wholly lacking in vitamines.

"There are now over a dozen brands of filled milk on the market, and only one manufacturer has attempted to restrict the sale of the compound to certain uses. Your committee is of the opinion that it is impossible to prevent fraudulent use and sale of this compound on account of the incentive of additional profit held out to the retail dealers.

"We cannot afford to let a few manufacturers in this country for an additional profit to them strike a blow which will do irreparable injury to our entire dairy industry. Dairying represents the highest point reached in farm economy. Wherever dairying is extensively practiced, the entire community reflects its benefits.

"The civilization of our country is dependent upon the dairying industry. We should do everything possible to encourage it. We need it to preserve the fertility of our soils, and the time to prohibit filled milk traffic is now, before it has done greater damage to our health, or to one of our basic and indispensable industries."

Latest information from Washington indicates that the Voigt bill will not come to a vote at this session of the Senate.

Canning Courses at Berkeley

A short course for canners was held Jan. 1 and 2, at the Agricultural Experiment Station, University of Californiia, Berkeley. It consisted of lectures and demonstrations with some laboratory practice and was atended by 90 men, most of them practical cannery men desirous of obtaining first hand knowledge of the chemistry and bacteriology of canning. The two days of the course were filled with lectures and laboratory practice from 9 a. m. until 8 p. m. in charge of W. V. Cruess, A. W. Christie, J. H. Irish and C. H. McCharles of the Division of Viticulture and Fruit Products.

The subjects covered briefly were: Hydrometry of sirups, brines and lye solutions; laboratory practice in the use of hydrometers, temperature correction charts and in standardization of hydrometers; lye peeling and analysis of lye and acid; determination of acidity of fruits and sirups; bacterial and non-bacterial spoilage; the use of the microscope and laboratory practice; relation of preserves, jams, butters and dehydration to canning; cannery by-products; preparation and canning of fruit sirups and juices; tomato products.

The Laboratory Manual of Fruit and Vegetable Products was used as a text book.

Corn Oil, Its Preparation and Uses

In a recent article in The American Food Journal on Corn Oil, Its Preparation and Uses, the name of the author, A. F. Sievers, chemical biologist, Bureau of Plant Industry, United States Department of Agriculture, was unfortunately omitted through one of those errors which will sometimes occur in a printing plant. The correction which should have been made in the subsequent issue was omitted through oversight.—EDITOR.

The Best Things From Current Food Magazines

A Digest of the Month's Periodicals for the Busy Reader

Training for Dietitians

HOSPITAL MANAGEMENT for November, 1922, gives an account of a paper read by Lenna Frances Cooper, Dean of the Battle Creek Sanitarium School of Home Economics at the convention of the American Home Economics Association. The principles involved in training dietitians are clearly set forth, somewhat as follows:

"As the position of dietitian is defined by hospital superintendents it consists of two types; first, diet kitchen supervision; second, food department supervision.

"In the first type of position the dietitian is concerned chiefly with the special diet work, while the administrative phase of the work is not especially emphasized. In the second type of work, the administrative duties predominate, though this type of worker must also give careful attention to the special diets, unless she is fortunate enough to have an assistant who may relieve her of this detail. In both positions the dietitian is an instructor, a member of the school faculty.

"The first type is not an ideal position for a competent dietitian except in very large hospitals, but it is a stepping stone for the inexperienced dietitian, who may the more easily and successfully acquire the technique of her profession by becoming familiar with the fewer duties before undertaking the larger responsibilities.

"The second type, that of the larger responsibilities, is becoming more and more the recognized status of the dietitian.

"There are still many other ways in which a dietitian may be useful to her hospital, either by adding to her already heavy responsibilities or by employing other dietitians for specialized work. They are goals yet to be attained. For instance, we believe it highly advantageous for the dietitian to visit the wards and to get accurate and first-hand information regarding all serious cases under her care, also to receive copies of reports of laboratory findings in said cases.

"We believe it also desirable for the dietitian to act as a consultant in dietary matters in the out-patient department and in some way it should be made possible for her to advise with patients before leaving the hospital. Co-operation with the metabolism ward, now fast becoming a part of the diagnostic facilities of the larger hospitals, is also desirable.

"Of course, no one dietitian can do all that is above outlined. It represents rather the duties of a department with at least a head dietitian and an assistant.

"Our first duty would seem to be to prepare our girls for the position as it now is and train them so well that the hospitals will find them indispensable. Thoroughness of preparation, conscientious endeavor and the spirit co-operation, I believe, are the foundations upon which we must build for professional recognition. Our second duty as instructors is to establish the ideals of the profession, to give a vision of things that are to come, but at the same time making our students realize that the goals ahead can only be reached by first doing well, extraordinarily well, the tasks that are 'expected.'

Administration Courses Essential

"The training of the dietitian consists of two types, i.e., first, class room instruction, and second, hospital interneship, neither of which is complete without the other.

"In any course for dietitians, the sciences must be made the foundation, particularly chemistry, bacteriology and physiology.

"Sufficient time must be given to the foods courses to acquire skill in preparation. The dietitian's reputation, her opportunity for gaining the confidence of her professional associates, as well as the nurses under her instruction, will depend upon her ability to "do" and to instruct in food preparation.

* * * * *

"The institution administration courses are very essential. As a part of these courses there should be one in organization, in which types of institutions should be studied, together with their relation to their communities; the relation of management and the personnel; the relation of the dietitian to the institution, including her specific duties, what is meant by line of authority, labor turnover; how to manage help, etc. Following this there should be courses in architecture of institutions, institutional housekeeping and laundry, and institutional equipment, as well as the large quantity cookery mentioned under foods, also simple accounting.

"Psychology, economics and physics all have their place in a dietitian's training.

"There are certain ideas and ideals that should be established either through curricula or extra curricula instruction. The first and most important is a professional attitude and regard for her calling. The nurse maintains this attitude more pronouncedly that any of the other professions. This is brought about partly by oral instruction, but probably more by the more or less military regimen of training and by the honor of the uniform which changes from time to time according to the length of service and the amount of responsibility carried. Our college training is quite the opposite of that of the nurse. In our effort to encourage independence of thought and self expression, I fear we sometimes fail to train the individual to develop in community or institutional life through team work or cooperation. To do this the dietitian must be possessed with the spirit of service. Unlike the nurse, we do not have an outstanding figure like Florence Nightingale to stand as a personificatiion of the ideals of the profession. Nevertheless, we must not fail to establish the same attitude of mind toward our profession."

Miss Cooper closes with detailed discussion of suggested outlines of instruction for dietitians.

Various Methods of Labeling Glass Containers

VARIOUS proven methods of labeling bottles and glass containers, from plain paper labels to etched, blown in the glass labels and paper labels, covered by glass cemented on to the container and highly surfaced celluloid labels, are described and their method of application explained briefly in an article by George P. Nelson in the American Bottler for November.

"When permanence and unusualness are more important than rapidity of production," says Mr. Nelson, "the framed label is occasionally used. An ordinary paper label is placed in a sunken panel, which is blown in the glass; a convex crystal, oval in shape, which exactly fits the sunken panel is cemented over the paper label. That the glass improves the appearance of the framed picture is demonstrated by the removal of the glass. An excellent cement for attaching the crystal to the bottle can be prepared from one part of yellow wax and three parts of rosin melted slowly to the consistency of sirup."

The article points out that although etched labels and designs such as appear upon perfumery bottles would be highly advantageous for use upon bottles containing iced beverages, the cost of etching is too high for the relatively low-priced beverage. Reference is made to the use of a decalcomanie process for labeling, which although successful in application is weak in its colors. There is also a description of the successful use of the celluloid label, which carries colored designs, if anything, slightly sharper and more brilliant than paper. Varnish is recommended for prolonging the life of paper labels.

Simple Method for Determining Per Cent of Butter Fat

A NEW method for determining the per cent of fat in butter is described in detail by E. H. Farrington in a recent issue of the Dairy Record. "Many comparisons have been made in developing this test," says the author in conclusion," and the evidence indicates that, in case four tests of one sample of butter agree within a reasonable figure, and these results are not in agreement with those obtained by a gravimetric, chemical analysis of the same sample, the gravimetric analysis is undoubtedly incorrect, principally because much smaller quantities of butter are used for gravimetric chemical analysis than for testing butter for fat by this method."

The new method, in brief, consists in obtaining small portions of butter from different parts of the lot to be tested and the special container in which they are placed is set in water having a temperature of 100 degrees Fahr. Great care is exercised to avoid breaking the emulsion. The samples for testing are placed in a small covered tin dipper with a nose. The thick liquid may be poured in a thick, round stream into the test bottle and no funnel is needed. The special test bottles have a capacity of about 56 cc. and are of the right diameter to fit into the pockets of the centrifuge of a Babcock milk test. The butter test bottle is cleaned and weighed empty and the exact weight recorded each time a butter sample is tested. Filled with butter to the 52 cc. mark the bottle is placed in a dish of water having a temperature of about 140 degrees Fahr. After warming for a few minutes the bottle is placed in the pocket of the Babcock centrifuge used for testing milk and cream. After whirling the bottles in the hot tester for about 15 minutes they are removed and placed in a dish of water at 140 degrees Fahr. When the test bottles have reached a temperature of 140 degrees they are raised but not entirely removed from the hot water and a reading is made at the top and another at the bottom of the graduated fat column of the tube. The number of centimeters of fat shown by the reading is multiplied by 0.9, which is the specific gravity of butterfat at 140 degrees Fahr.; the product gives the number of grams of fat in the sample tested. This number of grams of fat is then multiplied by 100 and divided by the grams of butter weighed into the test bottle, and the figure obtained by this division is the per cent of fat in the butter.

Classes for Undernourished Children

IN an article on health building through nutrition in a recent issue of The Nation's Health, Dr. M. Alice Assersen, secretary of the Children's Service of the New York Tuberculosis Association, outlines some of the characteristics of malnutrition by which conditions of undernourishment may be detected in children. These are more likely to be present in children whose weight is ten or fifteen per cent or more below the standard weight. They are: pallor of face and mucous membranes; dull eyes, with dark circles underneath; muscles so flabby and poor in tone that they are unable to support the body erectly; flat and narrow chest; abdomen prominent and back curved in at the waist line.

Among the causes of malnutrition are poor inheritance and prematurity; acute disease, especially if severe and prolonged, such as measles, whooping cought, pneumonia; chronic conditions such as heart disease, syphilis, and especially tuberculosis; bad teeth or tonsils; and improper diet. "Insufficient food," says Dr. Assersen, may be due to poverty, or to the habit of eating too little; or to badly prepared food because of ignorance in cooking, or to indulgence in rich, indigestible food such as pastry, candies and rich cakes, or to improper food not suitable to the need of a growing child, like tea and coffee, instead of milk. Children need nourishment, not only for the maintenance of life and the repair of tissue waste, and to furnish heat, strength and energy but—what is more important still for the growing child—food that will build new tissue and assure his proper development. He must have animal proteins for this purpose, such as are contained in meat, eggs and milk. He must also have a proper amount of lime, phosphorus, iron, and vitamins. Faulty food habits, such as eating between meals, eating irregularly and hurriedly, gulping food and washing it down with liquids, all have a direct bearing in contributing toward malnutrition in children."

In the treatment of malnutrition Dr. Assersen recommends a combination of the individual and class method, which awakens the social and competitive instincts and stimulates parents as well as children. Malnutrition classes should be limited to twenty or twenty-five children. A physician should be available or arrangements should be made for referring children to neighboring clinics, and also a special social or nutrition worker should be provided. This worker should visit the homes of the children to learn something of the conditions under which they are living, and parents should be urged to accompany their children to the weekly class sessions. One way of stimulating interest in the members of the class is to award stars of different colors for gains in weight, cleanliness of teeth, daily rest, drinking of milk and for the correction of defects. The entire class should be weighed each week and graduation based upon the amount of grain made.

Suggests Grading of Peas on Label

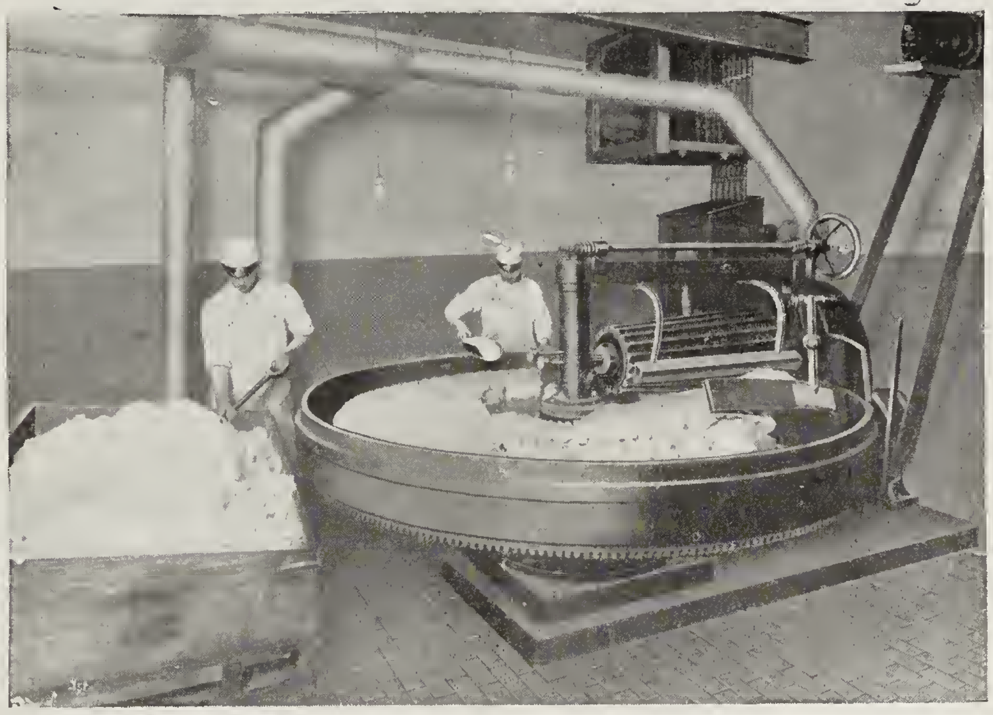
A PLAN for grading of peas, similar to that used by the Michigan Bean Growers' Association in the labeling of their products, is suggested in a recent issue of The Canner. Under this plan peas are to be graded as fancy, extra standard quality, standard quality, sub-standard, or soaked, and specific definitions are suggested as to the quality of peas and the number of broken peas, splits, oversize, or hard peas used in each grade. The writer declares that at present ninety per cent of canned peas and corn go to the consumer without carrying any special mark as to grade, and it is therefore impossible for canner, jobber or retailer to buy his goods intelligently. "We canners dump thirteen million cases of peas on the market for the public to consume," the writer continues, "without any definite method of grading, just leaving ourselves to the mercy of the wholesale grocer. I know, in a number of cases, where sub-standard peas and sub-standard corn changed their grade while in transit. I venture to say that most of the time our peas and corn go to the consumer for the grade they were intended, but I know positively, though not always, of many cases where our own goods did not.

"Only a short time ago I noticed in a large restaurant in St. Paul several cases of sub-standard corn piled in a window in one large pile. The special label for this particular lot of corn attracted my attention. This corn was sold to St. Paul jobbers at eighty-three cent per dozen, f. o. b. St. Paul, say seven cents per can. This same corn went over the counter and on the table at fifteen cents per dish and from four to six dishes served from each can. I inquired about the sale of this corn and found it was being sold at twenty cents a can. Some spread, from seven cents to twenty cents on a measly little can of sub-standard corn!"

What the Margarin Industry Has Accomplished

Handicapped by Burdens Heavier than on Any Other Food Product, Output Has Grown Steadily in Recent Years

By C. E. WRIGHT



Margarin "workers"

EVERY civilized country is spending money in researches on the production and utilization of fats and oils. The political and economic life of a nation may depend upon these products. A failure to fully appreciate the essential importance of a supply of fat in the daily diet was one of the miscalculations of the German militarists in preparation for the great war. The important role of fats and oils in our agriculture and economic development is the justification for the United States Department of Agriculture maintaining in its Bureau of Animal Industry a unit for investigational and research work upon animal fats, for maintaining in the Bureau of Plant Industry a unit for the study and development of our native oil bearing plants, and for the introduction and study of foreign plants which give promise of adding to our commercial sources of oils and fats, and for maintaining in the Bureau of Chemistry a research laboratory devoted exclusively to the consideration of chemical and physical problems of fats and oils especially those of vegetable origin, peculiarly important because of their relation to our food supply.

Millions of pounds of milk and of animal fats and oils, products of American agriculture, are now being utilized in a convenient and palatable form as oleomargarine rather than in a crude and unpalatable form. Many leaders in agriculture throughout the world have therefore been courageous enough and impartial enough to recognize the rights of consumers and of farmers in relation to this product.

Heavy Burdens Upon the Industry

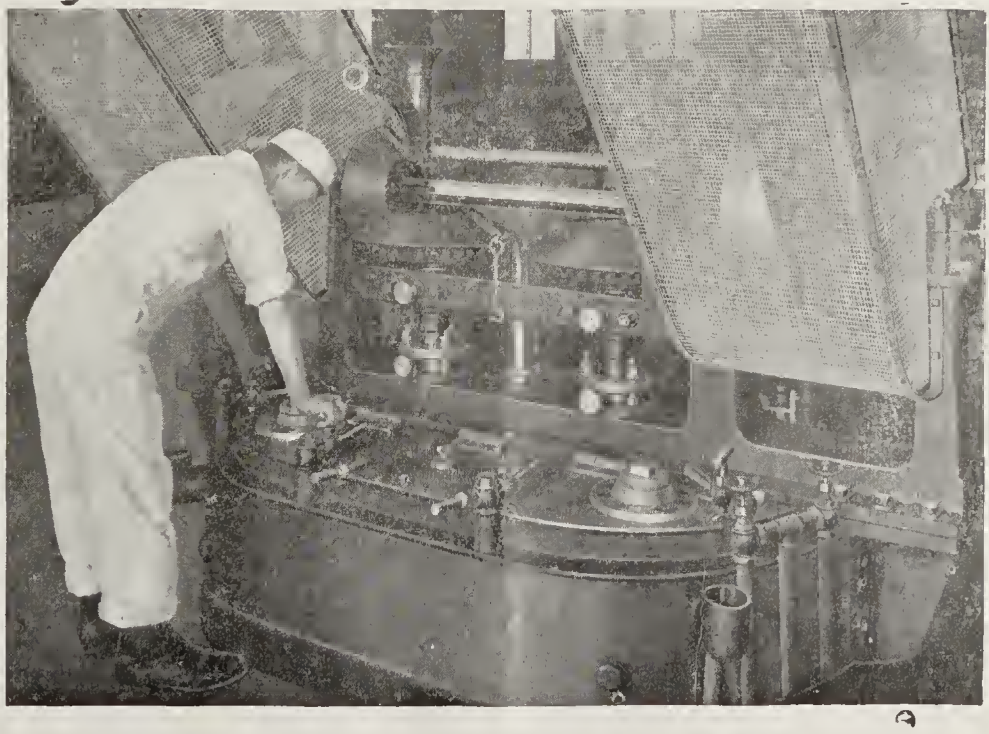
The United States of America is the only country that has placed heavy burdens not only as taxes but as unnecessary laws and administrative regulations for their enforcement upon this product of agriculture. These hardships are, to a degree a prohibition of the manufacture and sale of oleomargarine, for they actually limit the consumption of it by limiting the number of producers and dealers in the industry. Laws and regulations for their administration are so complex that it is extremely difficult to comply with them. An Iowa law for example requires that oleomargarine be labeled "a substitute for butter." A Minnesota law specifically forbids that label. Margarin manufacturers have been prosecuted for using the word "churned" in advertisements describing the method of manufacture of oleomargarine, notwithstanding the fact that in making oleomargarine milk and fats are put into a sure-enough butter churn which is revolved exactly as it is when cream is churned for butter.

Notwithstanding these obstacles the oleomargarine industry has had a steady growth in the public favor as well as in the annual production of the product. The total annual production in the United States in 1914 was 144,000,000 pounds. In 1920 it was 400,000,000 pounds. The industry is today undoubtedly making a better product than it ever made before. And this is the industry's greatest accomplishment.

A complete narrative of what the oleomargarine industry has accomplished would lead far into the history of the birth and growth of the oleomargarine industry and into the work and purposes of the Institute of Margarin Manufacturers. A bare outline of the subject is all that can be put down here.

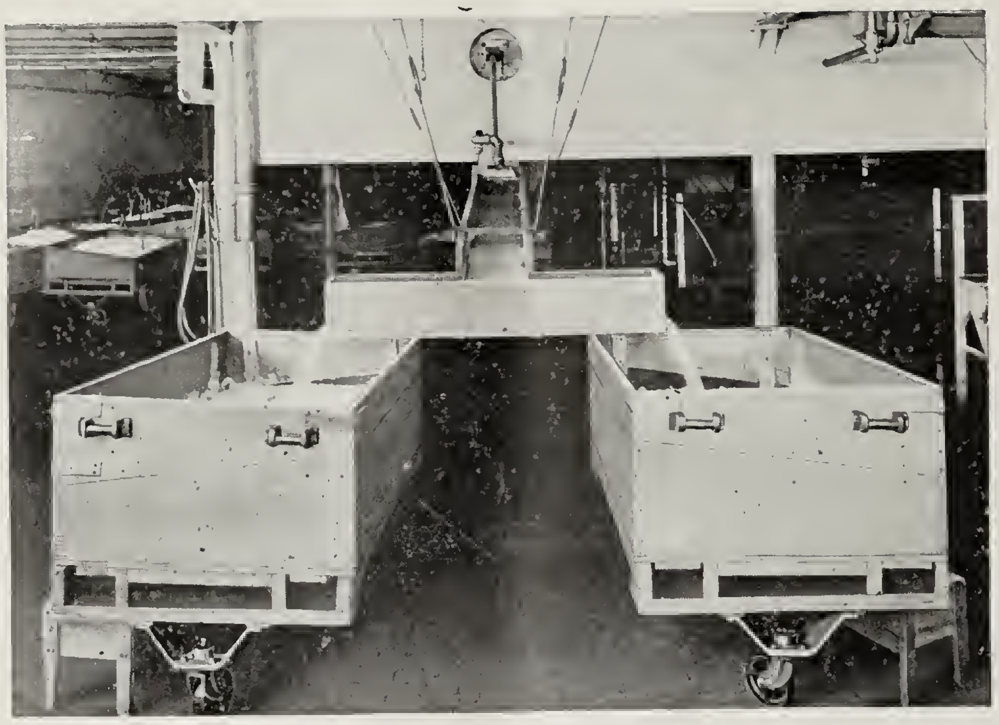
Discovered in France in 1869

In 1869, butter was scarce and expensive in France. The poor were unable to buy it. The available edible fats—chiefly beef fat, pork fat, and olive oil—were not considered very palatable. The poor man had no palatable spread for his bread and the rich man was frequently unable to get any butter at any price. Napoleon therefore offered a reward to the man who would invent the best butter substitute. Mege-Mouries invented a satisfactory substitute and received the reward. He made one by digesting fresh free fat with pepsin. He afterwards churned the digested beef fat with 10 per cent of cow's milk which imparted a butter flavor to the product. It was then solidified, washed, salted, colored and sold as oleomargarine. So successful was his invention that the method of the manufacture of oleomargarine today is essentially the same as the method which Mege-Mouries used in 1869 except that the fats and oils are not digested with pepsin. Vegetable oils as well as animal fats are now used in the manufacture of oleo-



Elaborate Equipment is Required in Margarin Making margarine, but the flavor of it is still derived from ripened cow's milk in which the fats and oils are churned.

Oleomargarine machinery has been developed to the point that in many plants the human hands touch neither the ingredients of the product nor the product itself. Mixing, handling, churning, cooling, marking, salting, wrapping, and packing—everything is done by machinery. Oleomargarine is the only article of food except meat and meat food products that is under government inspection and control. Its purity and wholesomeness is therefore assured. As turned out of the factories today it therefore represents the last word in science, invention, and regard for public health. It is just as digestible and wholesome as any other fatty foodstuff and performs all of the functions that fatty foodstuffs perform in our dietaries. It sells for about 25 cents per pound when good butter is selling for 75 cents per pound. The oleomargarine industry has therefore accomplished pretty nearly everything that can be accomplished in so far as the manufacture of the product is concerned, but researches are continuously being undertaken with the hope of improving it.



Releasing margarin from churns

Big Problem One of Marketing

The big and difficult problem of this industry now is one of marketing. The industry has accomplished much in this difficult task which has been made difficult by most severe laws and regulations for their administration. It has also been unnecessarily difficult because of a lack of a real industry spirit or industry interest on the part of many manufacturers themselves. It has also been difficult because of the erroneous notions entertained by many consumers concerning the product. In consideration of these facts, a few forward looking and courageous men in the industry got together with their brains and with their money in the early part of 1920 and formed an association of those interested directly and indirectly in the oleomargarine business. The association is known as the Institute of Margarin Manufacturers.

The first officers were:

President, Geo. T. Moxley, Wm. J. Moxley Inc., Chicago.

First vice-president, E. P. Kelly, Capital City Products Co., Columbus, Ohio.

Second vice-president, Howard Beatty, Glidden Nut Butter Company, Chicago.

Treasurer, H. P. Wilkins, Glidden Nut Butter Company, Chicago.

Recording secretary, B. S. Pearsall, B. S. Pearsall Butter Company. Elgin, Ill.

Secretary, J. S. Abbott, Washington, D. C.

The officers now are as follows:

President, E. P. Kelly, the Capital City Products Company., Columbus, Ohio.

First vice-president, B. S. Pearsall, B. S. Pearsall Butter Company., Elgin, Ill.

Second vice-president, H. H. Kamsler, Armour & Co., Chicago.

Treasurer, E. A. Stevenson, E. A. Stevenson & Co., Inc., New York

Recording secretary, Howard Beatty, the Glidden Nut Butter Company, Chicago.

Secretary, J. S. Abbott, Washington, D. C.

Starting with only a dozen small oleomargarine manufacturers, the Institute is now an association of forty-five large industrial organizations, the capital stock, of which runs into the hundreds of millions of dollars.

Purposes of the Institute

The purposes of the Institute are in general as follows:

1. To make a critical study of the methods of making oleomargarine.
2. To encourage basic scientific researches on the foodstuffs used in the manufacturer of oleomargarine.
3. To study the problems of marketing oleomargarine.
4. To publish articles, bulletins, and books on the purity, wholesomeness, food value, and economic importance of oleomargarine.
5. To protect the oleomargarine industry as far as possible from unjust legislation.
6. To promote cooperation among oleomargarine manufacturers and between manufacturers and food control officials.

The Institute has published seven bulletins relating to oleomargarine, and sent them to domestic science teachers, dietitians, food and health officials, county agricultural agents, home demonstration agents, legislators, libraries, and numerous persons interested in food, economics, and the public welfare. This has been the first systematic effort to tell a true and comprehensive story of oleomargarine.

The Institute has cooperated with legislative bodies and food control officials with the result that many useless laws and regulations relating to oleomargarine have been amended in a way to lighten the industry's burdens without in any way jeopardizing the interests of the Government or of consumers.

The Institute is the spokesman for the larger part of the oleomargarine industry in all matters relating to oleomargarine, and therefore performs all of the functions of a trade association as well as those of an institute for scientific and trade research.

Bureau of Chemistry Watches Mineral Waters Carefully

In 1920 the United States Geological Survey reported 479 commercial domestic springs; 36,218,260 gallons of water having a total value of $4,860,915 were sold, the average price per gallon being 13.4 cents," writes J. W. Sale, chemist in charge, Water and Beverage Laboratory, Bureau of Chemistry, in a recent issue of the National Bottlers' Gazette. He points out that it is generally conceded that all types of water supply must be carefully controlled from the viewpoint of disease, but that he has never heard of an epidemic being traced to the consumption of bottled mineral water shipped in interstate commerce.

The article continues: "This does not mean, of course, that disease has never been conveyed in this way. On the contrary knowing the character of water which is sometimes shipped in interstate commerce and offered for import, we must concede the possibility of disease having been conveyed in this manner prior to the enforcement of the Federal Food and Drugs Act in July 1907."

There are an unusual number of angles to the control of mineral waters, says the article, covering all the different phases of misbranding and adulteration. With regard to therapeutic claims, the bureau has become more strict in its attitude with each succeeding year. Names of diseases on the labels of mineral waters have not been regarded with favor for a number of years, for the reason that water is considered to be only an adjunct in the treatment of disease, and is not, in itself, a complete treatment.

Since water is regarded as a food as well as a drug under the Federal Food and Drugs Act, th article states, the quantity of contents should be declared properly.

Coconuts Gain in Popularity in the United States

More than a billion coconuts grown under the American flag are among the 1922 contributions of our tropical islands to the comfort and convenience of the people of Continental United States. Some of these came in the natural form but a large proportion in a manufactured or partly manufactured state. Most of these contributions to our food supply came from the Philippine Islands as a result of large investments of American capital in the coconut industry, with much smaller quantities from our other islands, Tutuila, Guam, Hawaii, Porto Rico and the Virgin group.

The American taste for the coconut, which was developed during the war period, still lingers, and our 1922 importation of that article in its various forms shows bigger totals both in quantity and value than in the corresponding period of 1921, but of course less than during the war period when Europe was demanding such a large proportion of our meat supplies. Curiously, too, the share which our own islands are contributing to this large importation of strictly tropical products is steadily increasing, due in large part to the development of the coconut industry in the Philippines during and since the war. The millions of American dollars invested in this industry in the Philippine Islands about the beginning of the war period are now making these islands the chief contributor to our requirements in this line, and a very large proportion of the $25,000,000 worth of coconuts and coconut products entering the country in 1922 came from those islands.

The coconut and coconut products, of which we have imported $300,000,000 worth since the beginning of the war, come to us in four distinct forms. First, the nut in its natural form; second, the shredded meat of the nut; third, a much more important article "copra" (the broken and dried meat of the nut in convenient form for transformation into oil); and, fourth, the oil itself, which forms 70 per cent of the meat of the coconut and which is now turned out in enormous quantities by the American factories in the Philippine Islands. These factories, which are of course located conveniently near to the coconut groves which line the shores of the islands, are built in many cases at the water's edge and the refined oil pumped through pipe lines between the factory and the tank vessels which transport it across the Pacific. Of 189,000,000 pounds of coconut oil imported in 1921, no less than 164,000,000 pounds came from the Philippine Islands.

Next in the importance of the various classes of coconut products is "copra" of which our 1921 importation was 190,000,000 pounds and nearly one-half of this came from the Philippines while the other islands on that side of the globe which sent considerable quantities are the Dutch East Indies, British Oceania, French Oceania, New Zealand and Australia. Most of the 35,000,000 pounds of shredded coconut imported in 1921 came from the Dutch East Indies, while nearly all of the 100,000,000 nuts in the natural state came from the Caribbean Islands or the area fronting upon the Caribbean and Gulf of Mexico, especially Porto Rico, the British West Indies, Panama, and Honduras.

While full statistical details of the importations of 1922 cannot yet be stated, sufficient information is at hand to show that the quantities imported in each of the four groups, coconuts, "shredded," "copra," and coconut oil, are in each case larger in 1922 than in 1921.

The uses to which the $300,000,000 worth of coconut products imported since the beginning of the war have been put are the manufacture of food supplies in their various forms, including artificial butter, also the manufacture of glycerin, soaps and many other articles of domestic requirement. The value of coconut importations in the various forms in the eight years since the beginning of the war, $300,000,000, is five times as much as in the eight years which preceded the war. And nearly all of this material which we import is paid for in the products of our farms and factories.

Africans May Enter Condensed Milk Business

Urging the establishment of a milk condensory sufficient to meet the requirements of the whole country, representations have just been made to the Board of Trade and Industries of South Africa setting forth the favorable possibilities of such a project. According to a report from Trade Commissioner Stevenson, Johannesburg, just received by the Department of Commerce the board will consider further representations from responsible persons or organizations in those dairying regions of the Union which give promise of being able to produce in the near future and within a limited radius of the proposed site of the factory up to 3,000 gallons of milk per day.

No Chance of Any Food Leaving Germany

Re-export permits will no longer be granted holders of foodstuffs shipped into Germany which cannot be sold on account of the high price, Commercial Attache Breed, Berlin, has just informed the Department of Commerce. Prospects of a difficult winter and the exhaustion of the purchasing powers of the poorer classes have moved the government to this preemptory stand. The export embargo on foodstuffs has been made more strict than ever before. Any goods left in the various freeports of Germany are not affected by this prohibition, and can be easily shipped away later to a more promising market if they failed to sell in Germany.

Dates from Groves Two Centuries Old

Set out by the Jesuit missionaries in 1720, thousands of date palms in Lower California are still producing quantities of high class fruit, approximately two and a quarter million pounds being shipped to all parts of Mexico each year. Small groves of date palms may also be found in many communities of the State of Sonora where water is available, at Guaymas there being an old date palm tree that has produced as high as one thousand pounds of dates in one season. Most of the Mexican date crops are handled by Chinese merchants and the bulk is shipped to points in Sonora and Sinaloa.

Mexican Coffee Crop Damaged

Losses ranging from 25 per cent to 30 per cent are expected in the coffee crop of Soconusco, Mexico, due to the recent heavy rains. According to Vice Consul Seller, the coffee crop for the season was estimated at from 20 to 25 million pounds. American buyers have been offering from 12 to 13 cents U. S. currency per pound delivered on the railroad station at Tapachula and Huistla, but because of the limited production and of the offer of 15 cents and better by Mexico City buyers, many of the planters are still holding their coffee.

New Source of Coffee

Adding income to salvation is the slogan of the Friends African Mission in the Kenya colony of Africa. This American organization is fostering the cultivation of coffee by the natives and samples of the best grades grown at the mission have just been received by Department of Commerce from Consul William L. Jenkins, Nairobi. The Mission can export about fifteen tons annually if there seems to be a demand among American purchasers for this type of coffee.

Rival of Tea Appears

Paraguayan tea, known as Herva Mate, is beginning to assume a place in world commerce and is now being shipped to all parts of the world. The aroma of the prepared leaf is not unlike China tea, and while the taste is usually an acquired one, it is exceedingly popular in all South American countries south of the Amazon, says Consul E. M. Lawton, Sao Paulo, in a report to the Department of Commerce. Chemical analysis shows that the plant has much less tannic acid or caffine than green or black tea, or even than coffee, and is therefore supposed to be less narcotic than the others. Its use in South America is by no means confined to the natives. Until recent years, mate was gathered by breaking off the limbs of the trees, but State laws now carefully regulate the gathering of the leaves. The native ways for preparing it are varied, but usually consist of putting a quantity of the leaf in a gourd or similar vessel, pouring on a quantity of boiling water, and then serving the drink through a tube.

Couldn't Do Without Lard

The Mexican's fondness for fried foods accounts for the surprising increase in recent years of Mexico's importation of lard, which has now become one of the most important articles of import. There are no packing houses in Mexico, the old practice of killing daily in each town for the local supply only still prevailing throughout the country. Lard is in this way made daily on a small scale in every community, but does not come up to the requirements of the people, states Consul T. D. Bowman, Mexico City, in a report just received by the Department of Commerce. Among the lower classes ovens are not available for baking and consequently frying is the favorite method of cooking. The native lard is made by the old-fashioned open kettle process. It is not refined and clarified as is the American product, but the natives have a traditional prejudice in favor of it. The fact that it has a strong odor, contains particles of cracklings, and is of dark color gives it so strong a preference that it is sold two to four cents higher than the American pure leaf lard.

Foodstuffs Around the World

Canned Foods Popular in India—Danish Condensed Milk Industry Picking Up—Chinese Like American Flour Better than Rice

Beans for the Hungry Greeks

WITH 400,000 refugees thrust upon her, Greece is expected to materially increase her already large imports of foodstuffs; beans particularly will be imported in larger quantities than ever before, says R. O. Hall, Commercial Attache at Athens, in a report to the Department of Commerce. Greece normally imports about 9,500 metric tons of beans and grows a slightly larger quantity herself.

Canned Foods on Pantry Shelves of Bombay

Bombay is right up to the minute when it comes to knowing about good things to eat. Consul T. M. Wilson informs the Department of Commerce that he has observed all kinds of American canned foods in most of the provision houses of that ancient city. The demand for these goods has stimulated the large provision houses to act as agents for American canneries and exporters, and in many cases these concerns purchase direct from America and dispose of the goods on their own account.

Corn for Island Sufferers

The very severe corn shortage in the Azores has dealt a heavy blow to the inhabitants, whose principal food is corn, according to a report received by the Department of Commerce, from Vice Consul Castleman, Horta. The consul states that relief is promised by the action of a group of California residents from the island, who have undertaken a subscription for the purchase of corn for the islanders relief.

Back Yard Gardeners in the Punjab

Corn, limas, peas, tomatoes, egg plant, radishes, lettuce and all kinds of American garden sass have taken the backlot gardeners of Northern India by storm, and now the directors of municipal gardens, managers of model farms, and experts of agricultural boards in the municipalities and provinces of Sind and the Punjab are keenly interested in the further introduction of these vegetables for general cultivation, according to a dispatch received by the Department of Commerce from Consul Avra M. Warren, Karachi. This interest is not limited to the European communities alone the Consul states but to the wealthier native classes as well.

Canadian Trade, Reaching Manhood, Seeks Independent Markets

The feeling by Canadians, noticeably growing stronger that Canada has about reached the status of a nation, is capable of looking beyond trade with her nearest neighbor and with other members of the British Empire, and can now develop markets for Canadian goods in remote parts of the world. With Europe bankrupt, a campaign is now in progress, says American Consul Taggart, London, Ontario, to increase the sale of Canadian grain, flour, fish, and other products in the Far East, especially in China. The three great impelling motives in life for the Chinese are affection, happiness, and wealth, and there is now taking place in China a progressive movement towards more and more modern conditions. Canada is taking advantage of this trend and with excellent transportation facilities, together with the high regard the Chinese hold for the Canadians and other English speaking people, a greatly augmented trade is expected in the near future. Exhibition and sales rooms are to be opened in Shanghai and other Chinese cities where the merits of Canadian food products are to be brought home to the prospective purchasers.

First Hunan Flour Mill Supplies Food and Raiment

With its teeming millions, the province of Hunan, in China, has but one flour mill, and the most striking and refreshing thing that greets the visitor's eyes is modern appearance and the exceptional cleanliness of the buildings and the grounds. This mill is just north of Changsha at the junction of the Sin Ho Creek and the Siang River and in the midst of typical surroundings of ancient China this modern establishment seems strangely out of place. Founded during the first year of the Chinese Republic and equipped with American and English machinery it has made itself an important factor in the economic life of the province. Three hundred workers are employed, two hundred of which work in the flour mill proper, while the rest are employed in making flour bags. Thirty looms are in operation for the making of the cloth, and when the cloth is finished and cut into the proper size it is sent to the homes of the country people who sew it together. The finished bags are stamped with a dye that is easily washed out. These bags are given to the dealers as commission, and the cloth is resold when the bags are empty to be used in making clothing.

Danish Condensed Milk Industry Picking Up

Danish cooperative dairies are going into the condensed milk business and are beginning to supply world markets with great quantities of this article. While Denmark prior to the world war exported very little condensed milk, the last two years have witnessed exportations reaching into millions of kilograms, Assistant Trade Commissioner Sorensen, Copenhagen, informs the Department of Commerce. In 1921, 17,000,000 kilograms of condensed milk left the Danish Kingdom the bulk of which was taken by England. The English prefer the Danish condensed skimmed milk, while other classes of condensed milk and cream go in considerable quantities to Germany, Austria, and also England.

Chinese Like American Flour Better Than Rice

Rice has become a poor third, compared to corn and wheat flour in the diet of the Chinese of Antung province and the surrounding country of southern Manchuria, according to a report just received by the Department of Commerce from Consul W. R. Langdon, Antung. Of the three kinds of wheat flour seen on the Antung market, American flour is the only foreign variety, the other flours coming from Shanghai and Manchuria. A certain amount of flour manufactured in Harbin must always be imported to mix with other brands in order to give the steamed Chinese substitutes for bread the glutinous properties required by native taste, but otherwise the flour that can be delivered cheapest, even though it be by the narrowest margin, captures the market. In 1921, about 13,000 bags of American flour were sold in Antung.

English Getting Palestine Oranges

The first shipment of 15,000 cases of oranges left Jaffa, Palestine, for England recently under arrangements completed by the growers and shippers association of Jaffa with the shipping companies. According to a report just received from Vice Consul George C. Cobb, regular shipments will be made every ten days. The prospects for the coming season are considered to be good, merchants at present paying as much as P. T. 25 to P. T. 28 per case to the growers ex orchard.

Italians Like American Salmon

American canned salmon is appealing strongly to the natives of southern Italy who regard meat as a luxury and do not eat it to any great extent. According to Consul Byington, Naples, nearly all the stores which carry a line of foodstuffs have in stock some American canned salmon at prices varying from 4 to 5 lire a can. The sales of salmon are already large but there is little doubt that they could be materially increased and a little aggressive merchandising at the present time would be almost certain to produce results.

Cornering Mexican Flour

A reduction in the present import tax on American flour going into Mexico has been suggested to combat the "corner" on the Mexican wheat crop which is alleged to exist, says a report just received by the Department of Commerce from the American Consulate at Mexico City. According to local press statements at Mexico City, a small group of merchants and millers have purchased ninety per cent of that commodity, and the price has been raised from seven to nine pesos per sack within a month.

New Apple Has No Core or Seeds

Apples without cores or seeds are promised by a discovery announced at Abbotsford, Canada, the particulars of which havè just been received by the Department of Commerce from Consul General Halstead. According to the announcement a seedless and corelss variety of Farmeuse apple has been developed, which differs but slightly in shape from an ordinary Farmeuse by being longer and flatter at the ends but with the typical coloring and flavor. Except for a slight marking on the flesh which outlines the situation of the core in an ordinary apple, there are neither core nor. seeds. The apples were developed in an orchard at Abbotsford and the discovery that they were out of the ordinary was an accident. They had come from a new block of Farmeuse, about eight years old, bearing for the first time in market quantities, which had been top grafted on Rabka seedlings. The discovery was made while grading for market, but unfortunately no record was kept of the tree or trees producing the new fruit and it will not be before another harvest that steps can be taken for its commercial development.

America Yields Costa Rican Coffee Trade to England

England has again regained her supremacy as the greatest importer of Costa Rican coffee, according to official Costa Rican statistics just furnished the Department of Commerce by Consul Waterman, San Jose. Out of a net exportation of 17,552,138 kilos, England took approximately 10,725,000 kilos as against slightly over 6,000,000 kilos to the United States. Notwithstanding the fact that the American imports were almost identical with those of the previous year, when the United States imported slightly over fifty per cent of the crop, British merchants have out-bought all competitors. In the opinion of the Consul, American buyers are unwilling to pay competitive prices for the highest grade coffees, and American commerce with Costa Rica suffers accordingly.

Propose Taking Canned Milk From Peruvian Free List

The Peruvian government is seriously considering the placing of an import duty on all canned milk entering that country, according to advices reaching the Department of Commerc from Commercial Attache Dunn, Lima. The proceeds of this duty are proposed to be used to promote the livestock industry of the republic. No import duty has heretofore been levied on forign milk, the imports of which amounted to $3,067,268 kilograms in 1920. The government estimates a total of about 1,000,000 head of cattle in the country. While it is not certain that this recommendation will be carried out, it would seem likely that the duty will be eventually imposed, even if not incorporated in the tariff bill now before the Peruvian congress, which continues milk on the free list.

American Rice Attracting Orientals

The importation of California rice into Japan is now so large in amount that it is drawing much attention, Commercial Attache Abbott, Tokyo, informs the Department of Commerce. The first shipment of California new crop rice arrived in Yokohama several weeks ago and the quality of the rice has been found very excellent in drying and uniformity of grain. The rice now being cut in California is expected to reach a total harvest of between 3,700,000 to 3,800,000 bags and is already on the market. The foreign rice in the possession of the Japanese government in the Tokyo and Yokohama warehouses is being shipped to China and it is expected that about 300,000 bags will be disposed of in this manner.

Hot Voyages Retard African Fruit Industry

Expanding their exporting business as rapidly as possible and handicapped only by lack of refrigerator steamers, the fruit growers of British South Africa propose to make every effort to supply world markets for their produce. The 1921 shipments of fresh fruits broke all records when 806,091 boxes were shipped from the Cape, principally to England, says Consul Pisar of Cape Town, in a letter received by the Department of Commerce. African fruits arrive in English shops at a time of the year when the fruits from the Mediterranean countries and North America are not available. Efforts have been made to export fruits to the United States and small quantities of deciduous varieties have found their way here, being shipped via England. Small consignments of melons have been shipped to the United States as deck cargo, but an absolute lack of refrigerator or ventilated hold space has militated against the establishment of such a trade. The dried fruit industry of South Africa has grown by leaps and bounds, nearly 7,000,000 pounds of raisins having been exported last year, together with several hundred thousand pounds of other sun-finished products.

Cuba May Have Her Own Vineyards

Prohibited during the Spanish possession of the island, the cultivation of grapes in Cuba holds forth many promises of being extremely successful. Wild grapes grow in profusion in nearly all parts of the country and the government argicultural experiment station is now endeavoring to ascertain what American varieties would be best suitable for that climate, Consul General Hurst, Havana, informs the Department of Commerce. Although the cultivation of grapes is not now legally prohibited, conservatism toward the introduction of new crops has heretofore continued the condition of colonial days, and not even oranges were widely grown in Cuba before the coming of the Americans.

Algerian Families Eat Figs by the Ton

A Kabylian family averaging six people will annually consume about 1,500 pounds of figs, and that is one reason why more figs are not exported from that section of Algeria. The natives of this province, energetic workers, are said to be descendants of the Romans, and although Mohammedans, their characteristics greatly differ from those of the Arab, who, as a rule, lack ambition and energy, says Mr. Charles Bellaiche of the American Consulate at Algiers in a report to the Department of Commerce. The fig tree assures the prosperity of many regions of Algeria, but especially those of Kabylia and notwithstanding the large home consumption, considerable quantities are exported each year. The number of planted trees in Kabylia is said to be 5,000,000, yielding about 45,000,000 pounds Before the war, great quantities of low-grade figs were shipped to Austria where they were treated for mixture with coffee, to make a product similar to chicory. A concern in Algeria is now using figs to make a substitute for coffee, and the products are in demand not only in Algeria but also in Paris where fair quantities are shipped.

Frenchman Perfects New Grape Products

A new grape product and an added source of revenue for French winemakers has just been perfected by a French concern at Carcassone, which has succeeded in reducing fresh grape juice to a concentrated product, say S. G. Ebling of the American Consulate at Marseilles. Different products are formed according to the degree of concentration. The most highly concentrated product is known as grape honey, while grape syrup and grape jellies are less concentrated. The grape honey, with the addition of water, gives the equivalent of fresh grape juice. The property of dissolving other products enables grape honey to be used in the preparation of many alimentary and pharmaceutical products, and its use extends to jams, breads, cakes and confectionery. Grape honey can also be used as the basis of certain medicines.

Alaska Salmon Canned in Canada

A total of 1,290,326 cases of salmon were put up last year in British Columbia, according to a dispatch just received by the canned foods unit of the Department of Commerce from Consul E. A. Wakefield, Prince Rupert. A good proportion of this pack was made up of Alaskan salmon—1,349,439 pounds having been landed at Prince Rupert alone and possibly another 250,000 pounds at canneries on the Naas River or Queen Charlotte Islands.

French Walnut Crop Increased; Quality Decreases

While a tremendously increased yield of walnuts was gathered in France during the season just closed, early reports of the excellent quality of the yield have to a large extent proved erroneous. According to a report just received by the Department of Commerce from Consul Jaeckel, Bordeaux, nearly two-thirds of the crop, which was about three times as large as last year's, were more or less damaged from dry weather conditions prevailing during the middle of Autumn, and more especially by the excessive and persistent rains which fell in October.

Better Use the Canned Variety

Fresh milk for Antofagasta, Chile, is a real problem, but it is being solved. The district is entirely desert, and nothing grows without irrigation. All water used is piped from the mountains, says Consul McMillen, Antofagasta, and forage for dairy cows has to be imported. A small dairy with 42 holsteins imported from the State of New York is the sole source of milk and the output of 39,682 pounds does not go far in supplying the city's demand.

Smyrna Fruits Available for Export

The following information has been received by cable by the Department of Commerce from Vice Consul Treat as to the probable amount of raisins, and figs in Smyrna district available for export. Compared with the 1921 season, the decrease this year in shipments to the United States is approximately 43 per cent and in total exports 54 per cent. During this season, shipments to the United States amounted to approximately 5,900 tons, compared with the total export of 6,500 tons.

"New Ireland" Takes to Canned Goods

Breaking away at last from the age-old fears which placed canned goods in the same categories as the "poisonous" cucumber and tomato, the natives in Ireland are more and more taking to the use of canned salmon and other American preserved foods. Old-time prejudices and fears of canned foods which are now the source of amusement to our grand-folks in this country are beginning to be questioned by the present generation of Ireland's housewives, and the increased consumption of canned foods in that country may be the result of consciences awakening as our own decades ago.

Working for Standard Sizes of Food Containers

Manufacturers, Distributors and Users Start Surveys, Under Guidance of Division of Simplified Practice

THE ultimate elimination of excess sizes and varieties of food containers is the object of a project undertaken by the Division of Simplified Practice of the Department of Commerce. A two-day conference of nearly 200 representatives of manufacturers, distributors and users of metal, glass, paper, fibre and wood containers was held in Washington at the Department of Commerce, January 16 and 17. A second meeting at which definite steps will be taken to simplify and help the food containers situation will take place within the next two months on the basis of the investigations to be conducted by the different industries.

The committee on metal container simplification recommended the following program to ascertain the possibilities of the simplification of metal containers:

That the committee communicate with each commodity packaging industry, through the secretary of its national organization, and request that it appoint a committee to assemble all the data on the different sizes and styles of containers that are used in that particular industry with respect to certain type or types of commodities that may be grouped together.

That the associations be requested to collaborate with their wholesale and retail merchandise associations and container manufacturers in the matter of elimination and simplification in size of containers.

That each national association using metal containers be asked to appoint a member of a central committee representing all such associations and furnish to the central committee all data gathered by each commodity industry for the purpose of investigating the possibilities of still further elimination and simplification by combination of the possibilites of the combined simplified schedule.

S. E. M. Crocker, of the Division of Simplified Practice of the Department of Commerce, will have the direction of the activities in connection with metal containers. H. A. Baker, of the American Can Company, Chicago, is temporary chairman of the committee. The other members are:

J. P. Dowding, Armour & Company, Chicago; John P. Gordon, Washington, D. C.; Roy L. Davidson, National Wholesale Grocers Association, Indianapolis; W. D. Bigelow, National Canners Association, Washington; J. O. Holt, manager, Eugene Fruit Canners Association, Eugene, Ore.; E. S. Marshall, representing the Virginia Can Company, United States Can Company, Roanoke, Va.; George M. Armor, representing the American Spice Trade Association, New York City, and McCormick and Co., Baltimore, Md.; Robert A. Rouse, Continental Can Company, Baltimore; James F. Cole, Atlantic Can Company, Baltimore, and A. E. Ayres, National Wholesale Grocers Association.

The representatives of the users and manufacturers of glass containers appointed Judge I. G. Jennings, business manager of the Glass Container Association, New York, permanent chairman of their group with authority to appoint a permanent secretary. The following resolutions were adopted:

"Whereas, as a result of a general conference held in Washington, January 16, called by the Secretary of Commerce at the request of certain allied industries, the general conclusion was reached that it would be fitting and proper in the general interest of simplification to undertake a careful survey of the glass container situation;

"It was therefore resolved that a committee of said interested industries be organized as a Committee on Simplification of Glass Containers;

"It was further resolved that the chairman of this committee be directed to prepare a basic form of questionnaire for use in the assembling of data and information required for futhering the program for simplification of glass containers, which questionnaire shall be promptly transmitted to the executive office of the representative national associations, as well as to other interested concerns, either independently by the chairman or through the established associations, as the chairman may desire, engaged in the production and distribution of food products in glass, with full explanation as to the reasons actuating this meeting and the purposes which it is hoped may be accomplished and with the request that information covered by the several questionnaires be collated by the various associations and submitted to the chairman of this committee with recommendations, after which either individual or general conferences will, at the discretion of the chairman, be called for further consideration of the problem and determination upon future procedure."

The representation and attendance in the glass containers section was as follows:

National Preservers and Fruit Products Association—Marcus Blakemore, president, Louisville, Ky.; Daniel R. Forbes, Washington, D. C.; M. G. Clymer, St. Louis, Mo., and George P. Williams, Kansas City, Mo. Association of American Importers of Spanish Green Olives—Ralph B. Annis, secretary, Brooklyn, N. Y. Flavoring Extract Manufacturers' Association—Gordon M. Day, president, Milwaukee, Wis.; Thomas J. Hickey, general counsel; Richard H. Bond, Baltimore, and Robert E. Heekin, Cincinnati. National Wholesale Grocers Association—Francis L. Whitmarsh, New York City. National Peanut Butter Manufacturers Association—Walter J. Hirsch, president, Chicago. Chamber of Commerce of the United States—E. W. McCullough, Washington, D. C. American Hotel Association—A. Lincoln Scott, Chicago, and Herbert A. Dyer, New York City. H. J. Heinz Company—R .E. Cook, traffic manager, Pittsburgh. Glass Container Association—Judge I. G. Jennings, business manager, New York City; A. F. Brady, Wheeling, W. Va.; P. C. Doyle, Brooklyn, N. Y., and S. S. Cline, Philadelphia.

The committee on simplification of wooden containers, of which A. L. Wilson, of the 4-One Box Makers Association, was chairman, reported its belief that the food products manufacturers themselves are primarily concerned in simplification and that the box manufacturer should merely stand ready to assist in solving any problem of practical container manufacture. It was agreed that an intelligent study should be made of the problem of the simplification of wooden boxes, and it was recommended to the manufacturers of all important products packed or shipped in wooden boxes that they assemble, through their respective trade associations or otherwise, definite data covering the number of sizes and dimensions of each size and character and weight of contents of all wooden boxes used by them. This information is to be placed in the hands of a committee of each organization for the purpose of enabling that committee to determine, in cooperation with the Division of Simplified Practice, what eliminations and possible standardizations can reasonably be made in the interest of economy of production and distribution.

All industries using wooden boxes are urged to furnish the information called for, and it is suggested by the committee that the data be assembled particularly for all products represented by the following trade groups, the container manufacturers and the Wholesale Grocers Association acting in an advisory capacity:

National Canners Association, National Preservers and Fruit Products Association, American Institute of Meat Packers, National Coffee Roasters Association, National Macaroni Manufacturers Association, National Wholesale Grocers Association, Sugar Refiners Group, Biscuit and Cracker Manufacturers, Bakers Association, Cooking Fats and Oil Refiners Group, National Confectionery Manufacturers Association, National Association of Spice Grinders, Salt Producers Association, Flavoring Extract Manufacturers Association, American Specialty Manufacturers Association, Chocolate and Cocoa Association and Tobacco Merchants Association.

Included in the above list of industries are a number that have already made considerable progress along the lines of simplification, notably lye, milk, soap, and washing powder.

Those present in the wooden box section of the Container Conference, which held its meeting January 17, were: J. D. Abercrombie, New England Wholesale Grocers; G. R. Briggs, American Cranberry Exchange; J. P. Dowding, Armour and Company; T. I. Foster, 4-One Box Makers Association; Alexander Furst, National Wholesale Grocers Association, Peoria, Ill.; L. McDavit, American Specialty Manufacturers, New York City; John W. Morey, National Wholesale Grocers Association; T. A. Potter, Quaker Oats Company; A. W. Schoepf, Proctor & Gamble Co., Cincinnati; A. L. Wilson, 4-One Box Makers Association and H. L. Pease, National Association of Box Manufacturers.

Secretary Hoover, of the Department of Commerce, in addressing the convention at the close of the sectional conferences, expressed approval of the progress and urged united efforts in the completion of the surveys recommended by the sections in their resolutions in advance of the second meeting at which definite steps are to be taken to more intelligently and thoroughly work out the type and kind of containers which are of no particular use and that should be eliminated.

United States Had 68,881,000 Head of Cattle in November, 1922

Recovery From Liquidation of 1921 Indicated by Substantial Increase During 10 Months of Last Year

A recovery from the liquidation in the cattle industry which began in 1920 and continued throughout 1921 is indicated by the substantial increase during the first 10 months of 1922 in the number of cattle on farms, according to data compiled by the U. S. Department of Agriculture.

The number of cattle estimated on farms Jan. 1, 1922, was 65,352,000 head. The average for the past 10 years was 63,199,200 head, the 1922 estimate showing an increase of 2,152,800 head or 3.4 per cent over the 10-year average. On Jan. 1, 1913, the total number of cattle on farms was 56,527,000, making the net increase for the 10 years 8,825,000 cattle or an average annual increase of 882,500 head.

The number of cattle in the United States apparently reached its peak in 1907 when the total was estimated at 72,534,000. From that point there was a steady decline until 1910 when the census enumerated 58,551,000 head. The following year showed an increase of about 2,000,000 head but then the number decreased until 1913, when, as stated above, the estimate stood at 56,527,000.

The World War with its abnormal demand for virtually all classes of meat and the correspondingly high prices for meat animals resulted in a steady increase in cattle from 1913 to 1919 when a high point of 68,560,000 was reached. From that time to Jan. 1, 1922, there was a steady decrease, the 1922 estimate being 3,208,000 under the 1919 figure. This decrease, amounting to only a little more than 1,000,000 head per annum or less than 5 per cent in three years, does not appear particularly noteworthy when considered in connection with the economic and industrial readjustments which occurred in 1920 and 1921.

The above figures apply to all cattle. If, however, beef and dairy cattle be considered separately, a somewhat different situation is disclosed. The number of beef cattle also reached its peak in 1907 when it was estimated that there were 51,566,000 head, and the next high point also occurred in 1919 when the estimated number was 45,085,000 head. In 1920 the census enumerated 43,398,000 and on Jan. 1, 1922, it was estimated there were 41,324,000 head in the country. This represented a net decrease from 1919 of 3,761,000 head or 8.3 per cent. From this it will be seen that the decrease in beef cattle exceeded the net decrease in all cattle. Even in the case of beef cattle, however, the 1922 estimate was 687,500 head over the average number on farms during the past 10 years.

The ultimate destination of all cattle either of beef or dairy breeding is the slaughterhouse and the beef consumer's table. This is a fact which producers of beef cattle sometimes overlook. Probably 90 per cent of the dairy calves dropped go to the slaughterhouse and produce veal. Furthermore, virtually all dairy cows and bulls ultimately arrive at the same destination. These animals produce beef and veal which are consumed and thereby come into direct competition with the beef produced by the range cattlemen and the corn belt feeder.

On Nov. 1, 1922, the estimated number of cattle on farms in the United States amounted to 68,881,000 head, compared with 68,932,000 on the corresponding date a year ago and with 67,321,000 on Nov. 1, 1920. These figures indicate a net increase in two years of 1,560,000 head.

The foregoing data apply to the United States as a whole. That local shortages of cattle exist in certain sections, notably those which have suffered recently from drought or other untoward circumstances, cannot be disputed. Generally speaking, however, total supplies in the country, together with consumptive demand, determine the level of market prices. It should also be borne in mind that local deficiencies are usually rather quickly erased when general market and economic conditions are such as to inspire confidence in the immediate future of the industry.

Wholesale Grocers Cited in Price Decline Guarantee

Complaints have been issued by the Federal Trade Commission against the Pennsylvania, New Jersey & Delaware Wholesale Grocers Association. The Commission alleges that respondent members of the association, in the purchase of products, discriminate in favor of manufacturers who guarantee a refund when prices decline and that lists of such manufacturers are cooperatively compiled by members of the association and other similarly organized associations. This, the Commission contends, results in a purchasing list which excludes manufacturers who do not use the guarantee against price decline system and thereby amounts to an unfair method of competition.

The Commission further charges that the association has adopted a plan of obstructing and preventing a competitor company from selling its products in the states of Pennsylvania, New Jersey, Delaware, and Maryland, to the association's members and others.

The officers and members of the association who are named individually as respondents, and who will be allowed thirty days to answer the complaint before the case comes to trial are: Robert L. Montgomery, Charles T. Fox, Percival Graves, George Lippincott, Max Pinkus, Robert G. Bursk, F. B. Reeves, Jr., and James Hewitt, all of Philadelphia; William A. Hannigan, Wilmington; E. J. Morris, Reading; Harry C. Blackwell, Trenton; C. W. Burtnett, Harrisburg; George C. Kelchner, Altoona, Pa.; T. L. Ruark, Salisbury, Md.; Harry Stoddart, Wilkes-Barre, Pa.; J. F. Schneider, Mount Carmel, Pa.; Charles M. Stauffer, Bethlehem, Pa.; T. J. Sproul, Chester, Pa.; G. W. Wettling, Scranton, Pa., and H. G. Kurtz, of Reading, Pa., and Arjay Davies, Easton, Pa.

Farmers Buy 40 Per Cent of Their Food Supplies

Recent Survey Shows that 9 Per Cent More of Food Used on Farms Could Be Produced Locally

About 9 per cent of the food consumed on farms could economically be produced locally rather than being brought in from distant producing areas, a nation-wide survey made by the United States Department of Agriculture shows.

Questionnaires mailed to 25,000 crop reporters in all sections of the United States reveal that about 60 per cent of the food consumed on American farms is produced on the farms where consumed; 9 per cent is produced locally but not on the farms reporting; about 22 per cent is not produced locally and could not reasonably be produced there, and that about 9 per cent is not produced locally but could be economically produced there for the displacement of food brought in from other sections.

By geographic divisions the Pacific Coast farmers produce at home less of the food consumed than do farmers in other sections, the figure being placed at 42 per cent. New England farmers produce 50.6 per cent of the food consumed at home. Farmers in the East South Central States produce the largest quantities of food for home consumption, the figure being placed at 68.6 per cent; farmers in the South Atlantic Division are next highest with 67.5 per cent of home production.

With regard to the quality of the food produced locally but not on the farm itself, the East South Central Division is given a figure of 6.6 per cent; the South Atlantic Division a percentage of 7.1. The highest percentage of food produced locally but not on the farms where consumed is shown in the Pacific States with 16.6 per cent; next lowest in order is the Mountain Division with 12.5 per cent.

The survey shows that in the Pacific Division 13.6 per cent of the food consumed and which is brought in from the outside could economically be produced locally. The smallest quantity of food which could be produced locally is in the Middle Atlantic and East North Central Divisions which show a figure of 7.5 per cent.

By commodities it is shown that the products that are not produced locally, but which could be economically produced or reasonably replaced by locally grown products are wheat, fruits, meats, canned goods, cheese, vegetables, sugar, food cereals, and potatoes. In a general way the survey indicated that the more isolated farmers produce more of their foodstuffs than do less isolated farmers and that the more prosperous sections of the country seem to buy more of the food they consume than do the less prosperous sections.

High freight rates appear to have slight effect on the quantity of food bought by farmers, complaints with regard to such rates being directed toward other things that farmers buy such as farm implements, feed, fertilizer, and lumber, and toward the things that farmers sell such as live stock, wheat, oats, hay, corn, apples, potatoes, and other crops.

Difficult toExport Margarin From Denmark Because of Government Restrictions

Home Consumption, However, Remains High as the Price of High-Grade Butter is Prohibitive to Average Buyer

WHILE Denmark leads all countries in production of butter, large amounts of margarin are manufactured, says a recent report to the Department of Commerce from the assistant trade commissioner at Copenhagen. The price of the high grade butter produced makes it prohibitive for the average Danish consumer, who turns to the good quality of margarin produced.

Although there are only about 1,100 workers engaged in the margarin industry in Denmark and about 67 factories, it is one of the important industries of the country chiefly because of the value of the product. In 1921 the total production of these 67 factories was 55,700,000 kg., valued at 96,000,000 crowns, about $17,088.000, with the Danish crown at the 1921 average of $0.178.

The margarin industry has shown a continued increase since 1913, when the number of factories in the country was 41 and the production was 42.260,000 kg. The number of plants had increased to 50 in 1919, but only 36,641,000 kg. of margarin were produced. In 1920, however, the number of plants had increased to 64 and the production to 55,500,000 kg. Despite the large production of margarin, Denmark's domestic consumption slightly exceeds it. In 1913 there was a total consumption of 44,260,000 kg., in 1919, 38,400,000 kg., in 1920, 54,000,000 kg., and in 1921, 56,000,000 kg. Margarin prices fell sharply during 1921 and in October, 1922, first quality margarin was quoted at 1.44 crowns per kg. with second quality at 1.23 crowns, compared with the price of 4.50 crowns for butter in October, 1922.

Local Consumption and Marketing of Margarin

The marked expansion in the Danish margarin industry in recent years indicates that domestic consumption of this product has been the cause of the increased output, as very little margarin (probably not more than 1 or 2 per cent of the total amount produced) is sent out of the country, and it is not unreasonable to assume that this table food has largely replaced butter in the daily diet of a large majority of the Danish people.

Margarin manufacture has probably reached the height of its development in Denmark. The domestic market could hardly be expected to absorb much larger quantities than it is already using, and by reason of the existing strict Government regulations governing its manufacture, exports of margarin from Denmark are virtually embargoed. The Danish law provides that, in order to make it easily distinguishable from butter, margarin must be of a very light color, and this according to the manufacturer practically excludes it from the export trade.

The foregoing provision, however, acts as a protection to the manufacturers of high-grade Danish butter, the virtues of which are jealously guarded by the agriculturists, and, in the face of the opposition of the Danish butter interests, it is doubtful whether an attempt to have the legislation repealed would be successful, for it is a well-established fact that butter making constitutes the chief industry of Denmark.

The manufacturers of margarin are endeavoring to establish markets in the Baltic countries and in Russia. That this field is now to be exploited by the Danish interests is indicated in the removal of a margarin factory from Odder, Denmark, to Riga, Latvia, where the owning company has purchased a large factory used formerly as a milk-condensing plant. From this vantage point the manufacturers propose to supply the Baltic and Russian markets with margarin.

Belgian Production of Margarin

The number of factories producing margarin in Belgium has more than doubled since 1913 and production has increased from 13,349 metric tons to 25,386 metric tons in 1921, says a report to the Bureau of Foreign and Domestic Commerce. In 1913 there were 12 margarin and 2 oleomargarine factories in Belgium and in the first three months of 1922 the number had increased to 14.

Prior to the war living was cheaper in Belgium than elsewhere in Europe and there was little need for margarin as butter could be bought at retail as cheaply as 3 francs per kg. Today, however, butter sells as from 15 to 16 francs per kg. compared with margarin at 5.4 to 6.4 francs per kg. As a result, margarin has taken a permanent place in many homes in Belgium, together with cold-storage meat, a product almost unknown in that country before the war. The margarin industry can, therefore, not only be regarded as a permanent institution, but is apparently bound to be much extended.

Besides the margarin produced locally, a large quantity is imported, principally from the Netherlands, whose product is popular in Belgium. Margarin to the amount of 715 metric tons, valued at 3,295,883 francs, came from the Netherlands during 1920, and in 1921 this amount was increased to 1,037 metric tons, valued at 1,573,718 francs. For the first six months of 1922 the amount of margarin brought into Belgium from the Netherlands was 250 metric tons. If this proportion was maintained for the remainder of the year the margarin imports from that country should amount to 500 metric tons. In 1920 Belgium imported 689 metric tons of margarin from the United States, but the present imports of that article from America are negligible, in view of the increased local production and the additional amounts which can readily be supplied by the Netherlands.

The National Can Company, 2566 East Grand Boulevard, Detroit, established in 1901, has been taken over by the National Can Corporation, organized with capital stock of $1,150,000 for the purpose of taking over the National Can Company and substantially increasing the manufacturing facilities of the Detroit plant and ultimately extending operations to other cities. Officers of the corporation are: Neil McMilan, president and treasurer; A. V. McCrary, vice president and general manager; Neil McMilan Jr., secretary, and A. G. Candby, sales manager.

Switzerland Offers Market for American Malted Milk

It is evident from a recent report of Vice Consul J. R. Wilkinson at Zurich, that Switzerland might prove a good market for American malted milk, once the Swiss were educated to its use as a food product. "The value of malted milk, as generally used in the United States, is practically unknown in Switerland, where its use in confined to medicinal purposes," says the report. "In practically every Swiss city of any size there are one or more patisseries where almost all the articles usually sold in American candy kitchens or ice cream parlors can be bought. The Swiss people are known to consume large quantities of milk and its by-products, such as cream, butter and cheese. It would appear, therefore," says Vice Consul Wilkinson, "that having once been introduced to the people of Switzerland as an additional beverage, the popularity of malted milk would be established."

The report suggests that a proper method of introducing American malted milk into Switzerland would be for American manufacturers to present samples of their product and literature on the subject to the several leading patisseries in the largest Swiss cities. It appears that no European malted milk thus far introduced into the country compares favorably with American brands. A list of the patisseries, hospitals, physicians, wholesale grocers and druggists in Zurich is obtainable from the Bureau of Foreign and Domestic Commerce, File CI-36.

Research Begun on Cost of Retail Grocery Selling

The collection of statistics on the cost of doing business in the retail grocery trade in 1922 is now well under way by the Bureau of Business Research, Harvard University. The bureau is handling this investigation at the request of the National Association of Retail Grocers, which believes that the results of such an investigation may be used to advantage by the retail grocers in the conduct of their business.

From the reports received the bureau will publish averages showing the cost of doing business and the average of each item of expense in the trade during the year. The Bureau of Business Research is also sending out a questionnaire to the wholesale grocers, asking for cost data on 1922, similar to that submitted for 1921. It is pointed out that by comparing their figures with the averages arrived at in the 1921 report of the bureau, individual wholesalers were in many cases able to introduce substantial economies in their business. Last year more than 636 wholesale grocers submitted statements for use in compiling the bureau's report.

There was a decrease of about 43 per cent in the exports from Smyrna to the United States of raisins, currants, and figs and a total decrease in exports of 54 per cent from the figures of the 1921 shipments. During the season, says Vice Consul Treat at Smyrna, shipments to the United States amounted to about 5,900 tons and total exports were about 6,500 tons.

The growers of table grapes in California have taken steps to organize a cooperative marketing association similar to the Sun-Maid Raisin Growers.

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SAN FRANCISCO

Association and Convention Calendar

American Association Creamery Butter Manufacturers, Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Association, 1135 Fullerton avenue, Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N. W., Washington, D. C. Secretary, Charles L. Parsons.

American Corn Millers' Federation, 332 South La Salle street Chicago. Secretary, T. M. Chivington.

American Dietetic Association, Washington, D. C. Secretary, Breta Luther, Children's Hospital, Boston, Mass.

American Macaroni Manufacturers' Association, 26 Front street, Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Association of Products from Corn, 208 South La Salle street, Chicago. Annual meeting early in the year. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Association, 52 Park place, New York. Secretary, H. F. Thunhorst.

Association of Operative Millers, Postal Telegraph Building, Kansas City, Mo. Next convention, June 4 to 9, 1923. Secretary, M. F. Dillon.

Biscuit and Cracker Manufacturers' Association of America, 90 West Broadway, New York. Convention, May, 1923. Secretary, R. T. Stokes.

Flavoring Extract Manufacturers' Association of the United States. Secretary, Gordon M. Day, Day-Bergwall Co., Milwaukee, Wis.

Institute of American Meat Packers, 509 South Wabash avenue, Chicago. Secretary, W. W. Woods.

National Coffee Roasters Association, 64 Water street, New York. Manager, Felix Coste.

National Association of Ice Cream Manufacturers, 155 North Clark street, Chicago. Secretary, N. Lowenstein.

National Association of Retail Grocers, 416 R. A. Long Building, Kansas City, Mo. Next annual convention at St. Paul, Minn., June 23 to 28, 1923. Secretary, H. C. Balsiger.

National Canners' Association, 1739 H street, N. W., Washington, D. C. Secretary, Frank E. Gorrell.

National Confectioners' Association, 11 West Washington street, Chicago. Convention at Atlantic City, May 23, 24 and 25 1923. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan avenue, Chicago, Ill. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana avenue, Washington, D. C. Secretary, A. M. Loomis.

National Food Brokers Association, 326 West Madison street, Chicago. Secretary, Paul Fishback.

National Macaroni Manufacturers' Association, Braidwood, Ill. Next meeting, June, 1923. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I street, N. W., Washington D. C,. Secretary, Charles W. Holman.

National Paper Box Manufacturers' Association, 112 North Broad street, Philadelphia. Annual convention, May 9 to 11, 1923, Claypool Hotel, Indianapolis, Ind. Secretary, William W. Baird.

National Pickle Packers' Association, 326 West Madison street, Chicago. Secretary, F. A. Vickers.

National Wholesale Grocers' Association. M. L. Toulme, 6 Harrison street, New York, secretary. Convention in St. Louis, Mo., May 16, 17 and 18.

Rice Millers' Association, 609 Maison Blanche Annex, New Orleans, La. Convention, May 31, 1923. Secretary, F. B. Wise.

Meat Packing Industry Announces Launching of Development Plan

Subscriptions Totaling $150,000 Make Beginning Possible—Bureaus of Education and Research to be Created Forthwith

Sufficient funds have been subscribed by the meat packers of America to begin actual development of the Institute plan, according to an announcement by Thomas E. Wilson, Chairman of the Plan Commission of the Institute of American Meat Packers.

The Institute plan provides for the ultimate development at Chicago of a combined educational institution, research institute, trade association and industrial museum. This institution will be national, not local, in character, and will serve the entire packing industry. One of the first steps in the development of the plan will be a series of lectures at the University of Chicago giving a perspective survey of the meat industry. The first lecture will be given by Henry C. Wallace, Secretary of Agriculture.

"Approximately $150,000 has now been subscribed by the meat packers of the United States," said Mr. Wilson, in his announcement, "to cover the necessary surveys and initial developments during a three-year period. These special subscriptions are entirely in addition to the regular revenues received by the Institute for carrying on its present educational and trade activities.

"Development of the Institute plan will mean the creation of an institution which combines with the research and technical educational facilities of continental industrial institutes the trade activities and exposition features of American business associations.

"Systematic instruction will be provided for men already engaged in the industry as well as for men intending to enter the industry. The packers of the United States have authorized the creation forthwith of a Bureau of Industrial Education and the engagement of an educator of distinction in this field to direct it. A thoroughgoing survey of the educational possibilties and dfficulties of the American meat packing industry will be made, and future provision for instruction—respecting both methods and kinds—will be shaped largely by the results of the survey.

"Similarly a Bureau of Scientific Research will be established at once and a competent director of standing engaged. It is believed that cooperative research will effect many savings and solve many scientific problems of the industry on which information is now incomplete.

"In the same way provision has been made for creating without delay a Bureau of Packinghouse Practice and Research. This bureau, directed by an expert on packinghouse operations, will function in furtherance of purposes similar to those just mentioned.

"Buroaus recently established and now in active operation include a Bureau of Nutrition, under the direction of Dr. C. Robert Moulton, who until January 1 was head of the Department of Agricultural Chemistry in the University of Missouri, and who is one of the foremost nutrition specialists in this country; a Bureau of Home Economics, under the direction of Miss Gudrun Carlson, who came to the Institute from the instruction staff of Teachers' College, Columbia University; and a Bureau of Merchandising, under the direction of Daniel W. Martin.

"These bureaus indicate in some measure the provision the Institute has made for orderly and directed development of its research, educational and trade activities. Pains have been taken to insure the development of the Institute plan by sound methods and along effective lines. For the same purpose, the entire work of the Institute has been organized, and the bureaus placed, in two departments paralleling the different phases of the Institute plan. Each of these departments has been placed under the direction of a vice-president of the Insitute. One is the Department of Association Management, in charge of C. B. Heinemann, formerly secretary of the National Live Stock Exchange and later of the Institute of American Meat Packers. The other is the Department of Education and Research, in charge of Whitfield Woods, formerly director of the Department of Information, Columbia University."

The lectures at the University of Chicago, which will be one of the first steps in the development of the plan, will be made available in printed form to all member companies of the Institute for use in study courses, discussion groups, etc. These lectures are designed to give a broad, general view of the meat packing industry. They will be given a week apart, beginning February 13, and continuing for eight weeks.

A list of the lecturers and their subjects with the dates of the lectures, follows:

Tuesday, February 13—(A) Introduction (a) The Institute and Its Development Plan (b) General Survey of the Course—Thomas E. Wilson.

(B) Inaugural Lecture, Livestock: The Basic Raw Material of the Packing Industry—Henry C. Wallace, Secretary of Agriculture.

February 20—The Packing Industry: Its History and General Economics—L. D. H. Weld.

February 27—The Packing Plant and Its Equipment—Arthur Cushman.

March 6—Financing the Packing Business—E. A. Cudahy, Jr.

March 13—Beef, Lamb and By-Products Operations—V. H. Munnecke.

March 20—Pork Operations—Oscar G. Mayer.

March 27—Science in the Packing Industry—W. D. Richardson.

April 3—Distribution of Meat Products—F. Edson White.

Recent Patents

The following patents of interest to readers of The American Food Journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,439,694. Method and apparatus for cracking nuts. Simon Cooper, New York, N. Y., assignor to Franklin Baker Co., Philadelphia, Pa.

1,440,011. Ice-cream base and process of making same. David F. Hosman, Scottsbluff, Neb.

1,440,744. Feeding mechanism for nut-cracking machines. Emil Phillippe, San Antonio, Tex., assignor to G. A. Duerler Mfg. Co., same place.

1,440,941. Chocolate-blending machine. Oscar M. Stout, Brooklyn, N. Y.

1,441,481. Apparatus for treating pickles. John M. Browne, Houston, Tex.

1,441, 790. Cheese-making machine. Cornelis P. Dros, Heemstede, Netherlands.

1,442,183. Dough-divider. Dennis W. Smith and Frank W. Church, Wilmette, Ill., assignors to Colborne Mfg. Co., Chicago, Ill.

1,442,232. Machine for forming sausage into links. George E. Neuberth, Newark, N. J., assignor to Packers' Equipment Co.

1,442,317. Process for the recovery of valuable constituents from certain waste liquors. Charles T. Whittier, Jersey City, N. J., assignor to Royal Baking Powder Co., New York, N. Y.

1,442,318. Process of preparing dry granular calcium acid phosphate. Charles T. Whittier, Jersey City, N. J., assignor to Royal Baking Powder Co., New York, N. Y.

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THE EDITOR'S PAGE

THE public market question may be approached from a number of angles but whether the individual interest involved be determining the advisability of opening a market in a particular community, in the selection of a site or in the operation of a market already established, the article by Mr. Kitchen and Miss Sherman which we print this month will be of interest. Each of the authors is an expert, Mr. Kitchen in organization and operation, Miss Sherman in distribution of raw and manufactured materials. In passing it may be noted that Miss Sherman is the sister of another of our friends and advisers, Professor Henry C. Sherman of Columbia University.

* * *

BIG men who are engaged with the big problems of food manufacture and distribution are well equipped to stimulate and help other big men, whether in their own or allied fields, and The American Food Journal hopes to become increasingly the medium through which these men will be glad to speak. The Conference Table points with pride to the first of these messages, that from President Tomlinson of the National Biscuit Company. No matter what the product, directors of food manufacturing plants have many interests and problems in common and these will be discussed by those best qualified to speak, that is, the executives themselves.

* * *

THE food chemist who looks beyond his laboratory to the nutrition laboratory, linking the results of work done in each, performs a double service. Not only does he protect his firm from impuritieis, insuring perfection in the final product, but he also provides for the advertsing department the best possible material for educational publicity. This is just what S. K. Robinson, chemist of J. L. Kraft and Brothers Company, does, and his article on the food value of cheese should have a very broad appeal.

* * *

NO matter how comprehensive may be the information distributed on any subject of scientific interest, there is usually a fresh angle from which to present helpful suggestions. The authorities who contribute to our deparment of Food Technology have found this new angle in the matter of botulism. Interesting facts are presented from the standpoint of household conditions which give to manufacturers fresh material to use in their educational work. All who have access to authentic information on this important subject should devise as many methods as possible of bringing it to the attention of the public. Such cooperation will go far toward allaying popular fears and misunderstandings.

* * *

SCIENTIST and layman alike will be interested in any information that will help to protect the important antiscorbutic vitamine. Mr. Kohman's article therefore will be of service to manufacturer, dietitian and teacher. Such matters as the pasteurization of milk for infants and the food values of canned goods are involved in these questions of protecting vitamine C which prevents scurvy and also is a sovereign remedy for the disease.

* * *

THE department Food and Health Education is especially designed for the class-room teacher of domestic science, but we are also eager to feature the work of the educators in executive positions. This month we have two such: Miss Jacobs of Washington, and Mrs. Calvin of Philadelphia. The latter recently resigned her post as Specialist in Home Economics for the United States Bureau of Education in Washington, to assume the direction of home economics in the public schools of Philadelphia.

* * *

THE infant of the dairy industry is the name applied by Mr. Supplee to the dairy milk industry. As such it has a peculiar interest, since the perfection of processes that make possible new products is one of the signs of our rapidly moving times. The author of the article in this issue is of the opinion that dry milk will never be a serious rival of fresh whole milk, but it has a distinct place as a labor saver for occasions where fresh milk is not necessary.

* * *

THIS month's contribution to our History of American Food has to do with one of the smaller and more recently organized branches of the food industry. The National Preservers and Fruit Products Association is the direct outgrowth of a definite demand on the part of the government for information concerning standards ad nomeclature as relating to preserves, jams and jellies.

* * *

A WORD of appreciation from those whose opinion is of weight is the best possible form of encouragement; such a word came to us last month from Dr. Lafayette Mendel of Yale University, who needs no introduction to our readers. Dr. Mendel writes: "I am interested to note the improvement in the make-up of the journal.

* * *

THAT we are succeeding in our ambition to provide ever increasing opportunities for cooperation between the various interests represented by our readers is attested by the fact that the food manufacturers, those first friends for whom The American Food Journal was founded, and the teachers of domestic science are eagerly making use of our new services. The list of educational material published by manufacturers is proving a very practical help to the teachers, and the manufacturers are responding with great cordiality to the requests for material. This is as it should be, for the material goes to those best qualified to spread the knowledge of the products in question, the teachers who are in turn in touch with thousands of homes.

In the stall above are displayed package goods, "dry groceries" and meats.

Careful planning makes possible selection of food with little effort.

The intermediate stage between farm and home.

The American Food Journal
The National Magazine of the Food Trades
Established 1906

Vol. XVIII MARCH, 1923 No. 3

A Public Market that Performs a Public Service

Center Market in the National Capital Dates Back to the Time of George Washington

By C. W. KITCHEN
Superintendent of Center Market, Washington, and
CAROLINE B. SHERMAN
Market Technologist, Bureau of Agricultural Economics, United States Department of Agriculture

THE beauties of the national capital bear ample tribute to the aesthetic vision of General Washington, but not every one is aware that in the course of his municipal planning the Father of his Country kept a guiding hand on practical matters as well.

Center Market, as it stands today, is on the very site set aside by General Washington when final plans for the capital, including provisions for a public market, were approved. This busy public market is one of the historic landmarks of Washington.

The present structure was started in 1872, under a corporation having a franchise from the Federal Congress. Under that franchise the government retained title to the land, receiving an annual rental. The charter contained a provision that after thirty years it might be cancelled by the government, upon payment to the corporation of the value of buildings and improvements.

This provision was incorporated in a law passed March 4, 1921, providing for the appraisal of the buildings and improvements of the property, and designating the Secretary of Agriculture to manage and operate the market. On April 1, 1922, the secretary assumed control of the property. The initial cost of the market, to the government, was $960,250. During its first year of operation under government control, the property has earned about $60,000 in excess of expenditures, which shows a satisfactory return to the government on the investment. About $20,000 were spent during this year on improvements. Many of them permanent in character.

The six hundred and sixty-six stands in Center Market average in size six by eight feet. They are rented under yearly leases to approximately two hundred tenants, each averaging three stands. About half of them are devoted to the sale of fresh and cured meats and grocery articles. The Department of Agriculture has no financial interest in the products sold upon the stands. The tenants receive their supplies from wholesalers and commission merchants and also from nearby farmers who haul their produce to market.

C. W. Kitchen

As soon as the department assumed control, regulations governing the operation of the market were issued, and a campaign to improve sanitary conditions was begun. To protect the public against the sale of impure or unwholesome meats a qualified meat inspector was employed by the market and now devotes his entire time to the inspection of meats offered for sale at the stands. So far as is known, this is the only meat inspector who devotes his entire time to retail meat inspection.

One of the services to the public which will result from the operation of Center Market by the government is the practical study of market equipment. Three thoroughly modern stands incorporating the latest ideas in sanitation and attractive display have been constructed for the sale of poultry, of fish and of fruits and vegetables. Their specifications are available for municipal or private markets.

Rules for Operation and Control

The Department of Agriculture regulates and controls the operation of trading in Center Market, and prescribes the hours of business, the sanitary arrangements, the fixtures and signs displayed, and the personal conduct of the tenants. It is the duty of the superintendent to enforce these regulations.

A written application for the use of any space in the market must be filed with the superintendent before a lease will be granted. This application must contain, besides the usual details as to name and address of applicant and his financial resources, information as to his experience in business, whether goods to be offered are to be bought for cash or for credit; whether the business is to be wholesale or retail or both; the commodities to be offered for sale; whether the applicant is financially interested in any other stand in the market; and various agreements as to the intention of the applicant to abide by the regulations laid down by the department.

No lease will be made for longer than twelve months, nor to extend beyond June 30 of any year. No lease may be sublet or transferred, but an occupant may terminate his lease at the end of any month after thirty days' written notice, giving his reason therefor. If at any time the Secretary of Agriculture is satisfied that a lessee or the holder of any privilege in the market is guilty of overcharging, extortion, profiteering, or making any unconscionable bargain or sale, he may, without recourse to law, eject the lessee from the property.

Classification of Commodities

Occupants of stands or spaces in Center Market are permitted to sell only those articles designated in his lease or permit. These articles have been classified by the department of agriculture in the following groups:

Butcher stands may sell fresh meats only, including beef, pork, lamb, mutton, veal and beef corned by the standholder.

Cured meat stands may sell cured meats, which include bacon, dried, smoked, salted and pickled meats, cooked ham and tongue, sausage and pork products, lard and lard substitutes.

Fish stands may sell fresh fish, shell fish, and smoked and cured fish.

Poultry stands may sell poultry, including chickens, ducks, geese, turkeys, guineas, and such game as may lawfully be sold.

Delicatessen stands may sell canned fish, cooked meats, salads, soft cheese, home cooked dishes, smoked sausage, fish ready to eat, and relishes.

Dairy product stands may sell cheese, butter, butter substitutes, milk, cream and eggs.

Bakery stands may sell bread, rolls, crackers, cakes, pastry and confections.

Fruit and vegetable stands may sell fresh fruit and vegetables.

Florist stands may sell cut flowers, potted plants, bulbs, and flower seed.

Grocery stands may sell tea, coffee, spices, staples, package, canned and bottled goods.

Stands for the sale of miscellaneous articles may sell any article not named above as may be designated in their lease or permitted by the superintendent.

Sanitary Regulations

The sanitary regulations prescribed by the department of agriculture insure the cleanliness and attractiveness of the stalls, all of which are subject to inspection by the superintendent. Stands must be cleaned daily inside and outside, including the floors. Receptacles must be provided by occupants for garbage and rubbish and these must be cleaned each day after the removal of their contents. No article in an unwholesome or offensive condition may be kept in or about the market. Employees are required to wear either a full length white apron or coat, or white overalls and jacket when working in the market, and these as well as the hands of the workers must be kept clean. All tools and implements, trays and other equipment must be kept in a clean and attractive condition. The bringing of dogs and other live animals into the market is forbidden.

Persons with any contagious or infectious disease may not be employed at the market; expectorating in the buildings or on the grounds is forbidden except in receptables provided for that purpose.

Regulation of Personal Conduct

The superintendent is also required to see that no disorderly conduct, loud noises, idling, or peddling is permitted in the market. Canvassing or distributing of handbills or other circular matter is forbidden, and signs or placards may be displayed only subject to the approval of the superintendent. Profanity or unbecoming comment of any sort is not permitted. Employees may not smoke either in the buildings or on the grounds.

Caroline B. Sherman

Other rules prescribed by the department of agriculture cover the use of the cold storage rooms by lessees, the use of space by farmers bringing their produce to the market and the use of conveyors and other vehicles on the market grounds.

Emphasis is laid throughout the series of regulations on the necessity for honesty and fair dealing on the part of the standholders and the farmers who sell at the market. Standholders are forbidden to arrange any article in such a manner as to mislead the public as to its real character, and in every possible way the public is protected from deception and falsification.

Government Aid in Planning Public Markets

In June of 1922 a consolidation was made of the Bureau of Markets and Crop Estimates and the Office of Farm Management, two major activities of the United States Department of Agriculture. The result of this consolidation was the present Bureau of Agricultural Economics.

The Market Division of the Bureau of Agricultural Economics again subdivides its functions so as to feature city markets, their organization and administration.

Those who are devoting themselves to this work endeavor to bring to the attention of the producer and consumer alike the various problems that must be faced and solved before a community is ready to adopt and support a public market.

Towns of less than ten to twelve thousand can scarcely expect even the simplest of curb markets to prosper.

A careful survey of local conditions and problems is the first step. The carrying out of this survey will be made easier if those concerned will consult the published literature of the United States Department of Agriculture on this subject, as, for example, "Open Types of Public Markets," by McFall Kerbey (Bulletin No. 1002, United States Department of Agriculture), and "Retail Public Markets," by G. V. Branch (reprint from the yearbook of the United States Department of Agriculture, for 1914).

The existing types of distributing agencies, buying habits in relation to cash or credit, public sentiment and individual psychology of the population —these are but a few of the factors that enter into the situation.

The buyers at public markets are naturally largely made up of the housewives of the community, and women differ widely in their reactions toward the matter of personal visits to a market. It has been remarked that if group leaders establish the custom others will follow. On the other hand, many women feel that the advantages do not compensate for the loss of time.

When a public market fails to take its proper place in the life of the community, market specialists point out that the principle itself is not at fault, but that the trouble is usually in faulty business management. Public markets cannot run themselves, but must have intelligent supervision and financial direction.

Once firmly established, a market should insure to the community one hundred cents worth of actual foodstuffs for every dollar expended; there should be the maximum of protection as to quality, weight and measure and, in short, such a market should occupy a significant place in a modern system of food distribution, always provided that local conditions are favorable to the establishment of such a plant.

Progress of the Powdered Milk Industry

Improvement in Methods of Milk Powder Production Goes Forward as Consumption of Product Increases

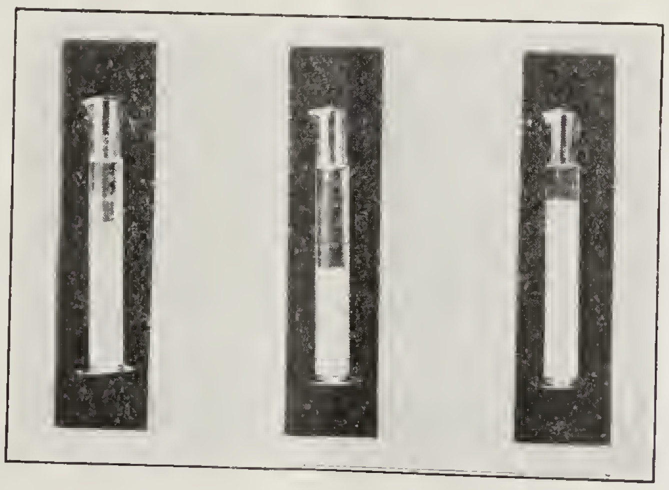
By G. C. SUPPLEE*
Director of Research Department, The Dry Milk Company, New York City

IT is only about twenty years since dry milk has become an article of commerce, and in comparison with other well recognized dairy products it is still an infant in the family of dairy staples. While only about 0.6 per cent of the total milk produced in the country each year is utilized in the preparation of milk powder, it is not to be inferred that this reflects an inherent lack of merit in the product. Cheese, which is recognized as a staple dairy product of long standing, absorbed only 4 per cent of the country's milk production in 1920, and evaporated and condensed milk, familiar products for the past fifty years, absorbed only 4.4 per cent during the same year.

These relative quantities of milk absorbed by different manufactured dairy products cannot be viewed in their correct perspective until compared with the amount utilized in the household as natural fluid milk. For illustration, estimates for 1920 show that 43.6 per cent of the entire production was utilized in this manner. The milk fed to calves and that estimated as lost or wasted comprised 8 per cent of the total. With over 50 per cent accounted for through these channels, and with butter absorbing 36 per cent, it would seem that we are primarily consumers of liquid milk and makers of butter. In view of the fundamental, social and economical conditions governing the production of milk and consumption of dairy products, it is not probable that these relationships will be materially changed in the near future.

With a clear understanding of the relative position of milk powder manufacture to the total milk production of the country and to that proportion which is consumed in various forms, it is evident that the enthusiasm which a few years ago prompted the uninformed to prophesy that within a decade 90 per cent or more of the milk utilized by the urban population would be in dry form was entirely contrary to sound judgment. Notwithstanding a variety of factors which may have retarded or stimulated the progress of the powdered milk industry, it is an unquestionable fact that recent years have witnessed considerable progress in this class of dairy products. This progress has continued in harmony with the prevailing economic conditions and in accordance with the merits of the product. The increase in domestic consumption of dry milk is illustrated by the following comparisons: In 1914 the per capita consumption was the equivalent of 1.1 quarts of the normal fluid product; in 1918 it was 1.4 quarts; and in 1920 it had increased to 2.4 quarts. The actual increase in quantity may be relatively small, but the increase of over 100 per cent in seven years is most significant.

Since natural fluid milk, concentrated milks and powdered milk are more or less analogous products, as compared with butter and cheese, further comparisons are of interest. In 1914 the per capita consumption of condensed and concentrated milks was equivalent to 12.2 quarts of the natural fluid product; in 1918 it had increased to 16.3 quarts; but in 1920 there was a slight decrease, the per capita consumption being equivalent to only 16.1 quarts. The average per capita consumption of fluid milk for household purposes probably increased slightly during the period from 1914 to 1920 until during the latter year it was estimated at 177 quarts. Irrespective of what the percentage increase in the use of fluid milk for household purposes may have been during the period from 1914 to 1920, it is quite certain that the relative percentage increase did not approximate that of powdered milk. There is, however, no great amount of evidence to indicate that dry milk is displacing or competing with the normal consumption of fluid milk as such.



The percentage of calcium insoluble of fresh milk, spray process milk powder, and roller process powder is shown here. In the first tube (fresh milk), 66.6 per cent of the calcium insoluble is shown; in the second (spray process), 50.8 per cent; in the third (roller process, 85.1 per cent is shown

From a review of statistical reports and close touch with trade conditions it may be concluded that dry milk is increasing in importance primarily by virtue of the fact that it fulfills a need developing concurrently with our modern type of civilization and up-to-date conceptions of nutrition. The business of supplying all potential users of milk with the customary fluid variety is an exceedingly difficult problem, and even though milk distributing agencies have achieved much, certain limitations are encountered which prevent the most successful and maximum utilization of milk in its natural form. The fields in which powdered milk has been used to advantage are varied, but in nearly all instances where its use has reached significant proportions, some particular item of merit possessed by the dry product, but not possessed by the natural liquid or concentrated milks, has been the deciding factor in determining its adaptability for the particular purpose. To a large degree, therefore, powdered milk supplements the use of fluid and concentrated milks, and in this manner it tends to increase the sum total of milk consumed.

In addition to supplementing the more familiar forms of milk, there are certain fields where dry milk comes into direct competition with the fluid or semi-fluid products. It is impossible to state with any degree of accuracy what the final outcome of such competition will be, for the reason that with few exceptions the particular merits of the two products for the particular purpose intended have not been sharply defined. Probably the most notable exception of this condition is the success which certain dry milk has attained for infant feeding. The significant aspect of this instance, and one which illustrates the high degree of favor accorded to the dry milk possessing the qualifications to meet special demands, is the fact that this particular product within the short space of a few years has become recognized as a standard infant food, not only in this country, but in many parts of the world.

It is certain that the convenience of

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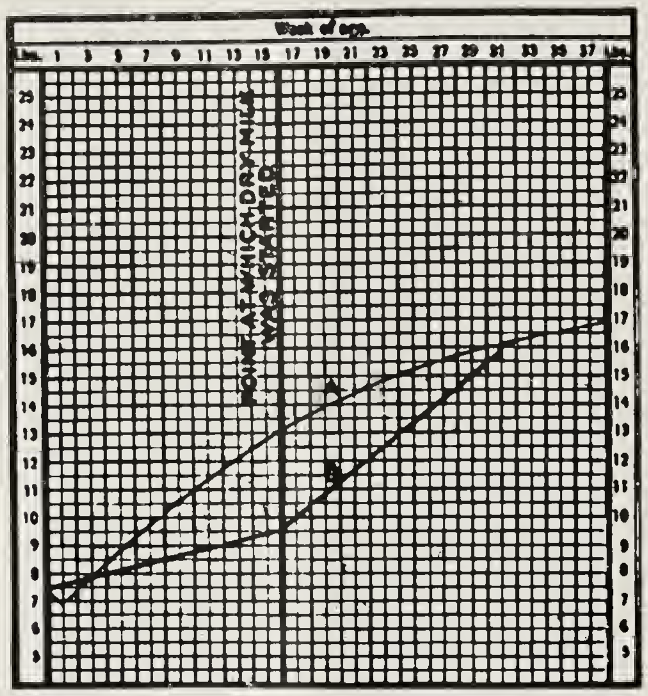
*An address given at the College of Agriculture, Ithaca, N. Y., on February 14.

powdered milk tends to increase the amount of milk used, and it is also true that progressive changes in other industries are tending to increase the use of dry milk. An example of this kind is the recently increased interest the baking industry has taken in the use of milk in bread. It has been estimated that twice as much milk will be used in bread in 1923 as was used in 1920. Bread is admittedly a staple article of the first order and with the increasing use of milk in bread a further increase in consumption of powdered milk is assured. Powdered milk is a standard ingredient of many confections and in certain instances its adaptability to the particular product has been sufficiently complete to result in the practical exclusion of other forms of milk. While considerable milk powder is used for ice cream this outlet is as yet somewhat irregular.

In spite of the lack of any appreciable amount of corroborative evidence, much concern has been shown about the possibility of the substitution of dry milk for the fluid product for household use, through the intent of the consumer himself or through fraudulent intent on the part of fluid milk distributors. A thorough survey would probably reveal isolated instances where both conditions have existed and possibly do exist at the present time. Such methods of utilizing dry milk, however, are at the present time of minor consequence, especially in localities where the natural fluid product is regularly obtainable at a price reasonably commensurate with the existing conditions of production and distribution.

There are certain reasons why powdered milk is not as yet a serious competitor in the fluid milk market. Probably one of the underlying reasons is that it is but little known to the average housewife and the occasional package which may come into her hands is considered more or less of a curiosity. To her it is an unnatural product and the gap between the customary quart bottles of white fluid with a layer of cream at the top, and a few ounces of creamy white powder is not easily bridged. Further complications arise when an attempt is made to fit the dry powder to the old recipes and habits calling for a definite amount of milk. Such complications and a certain amount of skepticism regarding its merits are entirely natural because it is a relatively new product, and because an intensive campaign to educate the housewife to the use of powdered milk has not yet been attempted by the industry as a whole. With this lack of confidence on the part of the domestic user, it is not difficult to understand why dry milk has but a limited outlet in the household trade; particularly in view of the fact that there is little or no margin of advantage in price in favor of the dry product.

The preparation of powdered milk is simple in principle, but many of the difficulties encountered in the dehydrating process itself are not generally recognized, nor are contingent problems thoroughly appreciated by those unfamiliar with the product. The basic principle involved in milk drying is the transference of heat from a suitable heated medium to the fluid milk in such a way that the maximum amount of water will be vaporized by a given number of heat units, and in a manner which will not impair the physical and chemical properties of the milk solids. To attain these results it is evident that engineering skill and the subject of thermo dynamics play a larger part in the preparation of dry milk than in any other manufactured dairy product. Irrespective of the methods used for drying it is to be recognized that milk contains from 87 to 88 per cent water, that all of this water must be evaporated, and that the physical laws governing the evaporation of water by heat are constant; therefore the question of heat utilization and fuel expense are items of no small proportions in the powdered milk industry. Another important feature which must be considered in passing judgment on the price of powdered milk to the consumer is that the price paid for fluid milk which is to be dried is a competitive price determined by the same fundamental conditions governing the price of milk used for other purposes.



The upper line across the chart represents the weight curve of a normal infant; the lower that of fifty infants before and after the use of dry milk. The heavy line indicates the point, during the sixteenth week, at which dry milk was first given to the infants

The powdered milk industry is no longer one which is active only during the season of surplus milk. The larger factories throughout the country operate continuously during the year and not just during the spring and summer months for the purpose of conserving the surplus production. In this respect powdered milk manufacture has become stabilized to a marked degree during the past few years. Various circumstances have undoubtedly been operative in bringing about this condition. The demand for dry milk is more constant throughout the year, an idle drying plant is an appreciable loss on investment, constant markets for milk producers must be maintained, and a uniformly high grade of milk must be utilized to make a satisfactory product. This latter feature is of particular importance and its more general realization has done much to further the best interests of the industry. Liquid milk which may be suitable for the manufacture of butter and cheese is not always suitable for making dry milk. The necessity for a first-class quality of liquid milk for drying is so imperative that no small part of the activities of the large milk drying concerns is devoted toward improving and maintaining a high quality of milk in the territory adjacent to their factories. While there may have been a time when it was believed that milk drying could be successfully carried on in isolated dairy sections where milk production was a side line, and its quality and quanity both irregular, it is now a significant fact that the more progressive and modern plants are located in the midst of our best dairy sections scattered all the way from New York to California.

Even though the drying of milk is a firmly established part of the dairy industry, perfection of methods and of the product is still going forward. Although powdered milk manufacturers have had and will continue to have their problems, considerable progress has been made during the past seven or eight years. Milk with its water removed is still a delicate substance and while it is not subject to bacterial deterioration as is liquid or semi-liquid milk, its handling and storage must be consistent with certain principles covering many other food products. Dry milk, irrespective of the method of manufacture, will take up moisture from the atmosphere according to certain fixed laws if not properly protected in suitable containers. This re-absorption of moisture is accompanied by a characteristic type of deterioration which is common to both the whole milk and skim milk products, and so far as recent investigations have shown it does not have any bearing on the particular type of fat deterioration frequently encountered in powder made from whole milk. Owing to the peculiar affinity of milk powder for atmospheric moisture, the container problem has been

(Continued on page 156)

The Value of Cheese in the Diet

Chemist Points Out the Nutritive Properties Which Make It a Good Food—Urges Public Education

By S. K. ROBINSON

IN the past, cheese was considered a concentrated food rich in protein with a high caloric value which could be used as a substitute or alternative for meaty foods. In other words, cheese was not considered an indispensable article in the diet. With the advent of the newer ideas of nutrition, bringing to light important accessory food substances such as vitamines, mineral salts, certain amino acids, etc., this view has been changed to a great extent. In the future, cheese will not be considered in the same light that it has been in the past. It will be considered an essential food product, without which the American dietary cannot be readily balanced in certain basic constituents.

Professor Mendel of Yale University is credited with the statement that within the next few years, the consumption of cheese will jump 100 per cent. It is the aim of this paper to bring out the importance of the foregoing remarks, and it is, of course, essential that cheese manufacturers become acquainted with the importance of cheese from the newer standpoint so that this information may be properly disseminated among the American public.

In the making of cheese, the greatest part of the casein and fat is brought down in the curdling process, leaving behind in the whey the milk, sugar and albumen. Most of the mineral substances go into the cheese. This can best be illustrated in the following table:

Losses Sustained in Cheese Manufacture

	Lactose	Calcium	Magnesium	Potassium	Sodium	Phosphorus	Chlorine	Sulphur	Iron	A B C Vitamines
Cheese	1-2	.93	.037	.089	.606	.683	.88	.263	.0013	++++? +?
Milk	5	.12	.12	.143	.51	.098	.106	.034	.00024	++ +++

S. K. Robinson

Here it can be seen that the three most important constituents, viz., the calcium, phosphates and the iron, are lost only to a small extent. Since the cheese is rich in fat, fat soluble A or the growth vitamine is almost completely retained in the cheese. The vitamines B and C are also retained but to a smaller extent, which has never been exactly determined. It is therefore clear that whatever is said about the nutritive value of milk is to a great extent also true of cheese because the most important constituents are retained to a very remarkable degree. As a matter of fact, as will presently be shown, cheese, being the more concentrated food, enhances some of the benefits derived from a milk diet several fold.

The Importance of Mineral Matter

Until recently the science of nutrition busied itself chiefly with the study of fats, proteins, and carbohydrates, and a deal of important work has been collected. The importance of mineral matter in the diet has been overlooked unfortunately. That the minerals are important, however, can be seen at a glance when we realize that 2 per cent of the body weight is made up of calcium and over 1 per cent of phosphorus.

Here is an interesting experiment that shows the importance of minerals.[1] Rats fed upon a well-balanced diet, composed of carbohydrates, protein and fat, but devoid of minerals, died sooner than another litter of rats placed on a starvation diet.

The Role of Calcium and Phosphorus in the Diet

Of the calcium content of the body 99 per cent is found in the bone. Phosphorus, however, is found all over the body; there is no other element which has such a wide distribution. Both of these minerals are of the greatest importance in growing animals. This point can be clearly demonstrated from the following table where the close relationship between the growth of the young animal and the calcium and phosphorus content of the mother's milk is shown.

Relationship of Calcium and Phosphorus to Growth of Young After Bunge

Kind	Days to double in wgt.	Calcium	Phosphorus
Human	180	.02	.02
Horse	60	.09	.06
Cow	47	.12	.09
Goat	22	.14	.18
Sheep	15	.18	.11
Swine	14	.18	.14
Dog	9	.32	.22
Rabbit	6	.65	.43

Rickets and soft bone in children, poor teeth and similar troubles can be directly traced to insufficient calcium in the diet. According to Dr. J. B. Delee, of Northwestern University, a disease hyperemesis graviderum, a pernicious vomiting of pregnancy, has been traced to an insufficient calcium diet. Phosphorus is always found where growth is taking place, where it plays a leading part. It is also abundant in brain tissue; pathological cases of the brain have been attributed to insufficient phosphorus.

According to Lorand,[2] we owe our superiority to all other organisms to the brain which is very rich in phosphorus. Without phosphorus, there is no thought. It is claimed by others that fatigue of the brain and nerves should be met by more phosphorus in the diet.

The point of great interest in this connection is that a mixed diet will in most instances produce the required amount of iron and protein but is apt to be deficient in calcium and in calories. Analyses[3] made of the mixed diet

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From an address delivered by the author, who is connected with J. L. Kraft & Brothers Company.

[1] Starling, Human Phyisiology, page 74.

[2] Health & Longevity Through National Diet. 1912.

[3] Bulletin No. 227, Exp. Statioı. U. S. Dept. Agriculture.

in American homes shows that they are deficient in calcium a great part of the time. A glance at the accompanying chart will show why this is very apt to be the case.

High in Calcium	**Low in Calcium**
Cheese	Meat
Vegetables	Fish
Milk	Bread
	Grains

The American diet is apt to be made up chiefly of the grains and meat products. Both of these foods are known to be deficient in calcium. Indeed, it may well be said that the deficiency in calcium is the big gap in the American diet today and it is primarily in this connection that cheese becomes an essential factor—because cheese contains a combination of calcium and phosphorus in greater proportion than in any other food, organically combined with the casein in such a way as to make it readily available.

To put this same matter entirely in other words, although bread and meat may be a balanced ration from the standpoint of supplying carbohydrates and protein, from the standpoint of supplying the mineral constituents, it is decidedly deficient and unbalanced. The best way to stabilize this inequality is to increase the amount of cheese and milk consumed.

Vitamines

In the last twelve years the interest of the scientific world has been focused on accessory food substances existing in small amounts in various foods without which normal growth and health cannot be maintained for any great length of time. These substances are known as vitamines.

Up to the present time, three such vitamines have been definitely found to exist. They are the fat soluble A, or the growth vitamine; the water soluble B, or antineuritic; and the water soluble C, or the antiscorbutic vitamine. As a result of this remarkable discovery, foods hitherto unknown to any great extent have become a prominent part of the diet. There is a sad side to this problem, however, which is that many drug preparations have been put on the market which are supposed to contain the necessary vitamines to maintain health and bodily vigor. It is unfortunate for the public to get the idea that these vitamines are to be administered in the form of drugs and lose sight of the natural foods which contain vitamines in abundance in an uninjured form.

One of the foods that combines the three vitamines in greatest abundance is whole milk. Cheese is very rich in the growth vitamine. It also contains the other vitamines but to a lesser extent than does milk. Just to what extent the vitamines B and C are retained in cheese is now being determined in our laboratory.

Amino Acids

It is important in a paper of this kind, in order to make a complete story, to mention the importance of tryptophane, a substance in which casein is very rich. Tryptophane is an amino acid. The amino acids may be considered the building stones of protein. There are variable numbers of amino acids linked together to form the different proteins. The famous Abderhalden has shown that proteins are not complete unless they contain the substance tryptophane. His experiments on rats show that in those cases where tryptophane was extracted or destroyed previous to feeding, the rats were incapable of maintaining the nitrogen equilibrium and eventually died. Two other amino acids have been isolated from casein not as yet found in any other protein. Their importance is unknown.

Digestibility of Cheese

Concerning the digestibility of cheese, there has been a wrong conception prevalent. This was rather conclusively shown in experiments conducted by the Office of Experiment Stations.[5] Young men in good health were fed a mixed diet containing large amounts of American factory cheese at different stages of ripening. The result showed that over 90 per cent of the cheese was available as energy and furthermore it caused no constipation or physiological disturbances. Experiments on cooked cheese also indicate the same result. Cheese, being a food in which the protein is closely intermingled with fat, remains a little longer in the stomach than is the case with other foods and gives a sensation of fullness and heartiness. In the intestines, cheese is very quickly digested.

The respiration calorimeter experiments[6] were conducted to measure the energy expenditure during active digestion. Comparisons were made with meat and cheese. Meat is usually considered a food very easily digested. These experiments did not show any material difference between the amount of energy expended during meat and cheese digestion.

Another point of interest is brought out in the work of Konig,[7] of the University of Minnesota. He states that cheese, ingested together with other foods, had a marked influence in increasing the digestibility of the entire meal. We need not worry about the digestibility of cheese. The English and Scandinavians, who use many times over the amount of cheese that we do, are not troubled with as much constipation as the American public.

Acid-Forming and Base-Forming Elements of Diet

There are certain foods that cause the acid to predominate after a meal and others are not so acid-forming or are entirely basic. The acid-forming foods tend to decrease the alkali reserve in the blood, a condition which is undesirable if not harmful. The comments of W. Fitch[8] on the acid-forming foods are as follows: "It must be regarded as physiologically wrong for man and correspondingly disadvantageous; moreover, it is quite certain that in certain pathological conditions the lack of base-forming elements is actually harmful." Cheese and milk are both important as basic foods.

Caloric Value of Cheese

The number of calories that cheese furnishes per pound is quite variable depending upon the cheese in question. Hard American Cheddar cheese will furnish as much as 1900 calories per pound. When compared with other foods we find that cheese yields a lesser number of calories per pound than some of the grain products but considerably more than lean beef, fish, etc.

If, however, we are to compare some of the basal foods by assigning for each 100 calories a score of forty and for calcium, phosphorus, iron and protein content, 15 points for each 100 calories, we have, as shown in the following table, the score:[9]

Meat	1460	points
Eggs	1341	"
Milk	700	"
Butter	1750	"
Bread	1060	"
Beans	3350	"
Oatmeal	2465	"
Almonds	2000	"
Cheese	5690	"

It must be remembered here that other advantageous factors such as vitamines, tryptophane, etc., are not considered in this score. If they were, cheese would show at still greater advantage.

Some Advantageous Uses for Cheese

As can be seen from the foregoing discussion, cheese must necessarily be considered an important food in the diet from any one of the factors considered. It would, however, be of greater value in special cases, for instance in growing children who are in great need of calcium, phosphorus and the growth-promoting vitamine A.

As has been pointed out, cheese is especially rich in all of these factors and the intelligent mother should see that her growing boys and girls have at least one ounce of cheese per day, either in the raw form or better still, combined with vegetables in a salad.

To the pregnant woman, these same three aforementioned factors, viz., calcium, phosphorus and vitamine A, are very important in order to prevent soft bones in the infant. During the period of lactation the richness of the mother's milk in these growth-promoting constituents is dependent to a certain extent upon the food ingested. It has also been shown

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[4] Matthews "Physiological Chemistry."

[5] U. S. D. A. Bureau of Animal Industry. Circular No. 166.

[6] U. S. D. A. Annual Report, Sec. 1910, Page 149; Report of Exp. Sta., 1910, p. 35.

[7] Bulletin No. 74, Human Food Investigations.

[8] Fitch's Dieto Therapy, p. 357, Vol. 1.

[9] H. C. Sherman, 1918.

that cows, during the lactation period, will actually draw calcium salts from their bones.

As a source of the proper amino salts, as a basic-forming food and to balance the diet in calcium, cheese must necessarily find a place in the diet of adults. In the convalescent diet, cheese can often be used to very good advantage. On this point, W. Fitch can be quoted as follows: "Cheese has its place even in the sickroom, as in cases of tuberculosis, neurasthenia, diabetes, convalescence, dyspepsia, enteritis, and enterocolitis. The easy assimilation of a certain quantity of soft cheese and their peptogenic and antiputrefective elements is of decided value from a therapeutic standpoint."

At the present time, an experiment on the feeding of cheese to tuberculous patients is being conducted by the Chicago Municipal Sanitarium in connection with our laboratory.

Cheese Versus Meat

In a paper of this kind, a discussion of the consumption of meat is inevitable. It must be borne in mind that meat is a nutritious food, very appetizing and is not spoiled easily in the cooking. It is also a popular food and its consumption is to be encouraged up to a certain extent, but whether it is worth while to consume the enormous amounts that we do is entirely another matter. The report of the Committee on Food and Nutrition, of the National Research Council, compiled April 3, 1920, has summed up some very striking points concerning meat. This report, in part, is as follows:

"Meat is strikingly poor in calcium and does relatively little to balance a diet consisting largely of bread or of other products of seeds. Of course, it does supplement the protein but American dietaries would nearly always be adequate as regards protein even without the meat that they contain. On the other hand, dietaries containing little or no milk are very apt to be inadequate as to calcium. Vitamines furnished by hay and grains and thus consumed by cattle are stored in the animal tissues to only a limited extent but are transferred in abundance to the milk. Hence the vitamines of grains not directly available as human food are brought into form for man's use—very efficiently through milk production, and very inefficiently through the production of meat."

Attempts are frequently made to refute some of these statements by citing the meat-eating Eskimo, but Krogh in his recent studies of the Eskimo has shown that, contrary to general opinion, the Eskimo does not subsist entirely upon meat. Many green herbs and weeds are eaten during the short summer season and a seaweed common in the north is eaten quite abundantly. We must also remember that the Eskimo eats his meat raw and partakes frequently of the animal's organs. Recent experiments have shown that the greatest storage of vitamines is not in the muscular tissue but in the liver, heat and kidneys, meats which the American public consumes only in trifling amounts.

With these facts in mind, let us glance at the accompanying chart and see what the American public is paying for the different classes of foods.

Money Spent for Food in America

Food Product	Spent in Millions	Per cent Spent*	Per cent Calories Furnished	Spent by Scientist
Meats	2,800	33.19	21.33	10-15
Eggs	400	5.55	3.39	5-7
Milk	500	9.08	15.78	25-30
Cheese	50	1.13	2.30	2-3
Butter & fats	500	8.14	4.37	10-12
Grain	1,000	17.85	30.85	12-15
Sugar	500	3.8	4.47	3
Vegetables	500	9.12	13.07	15-18
Fruits	300	6.03		
Nuts	50	.35		
Miscellaneous	500	5.76		

They are spending close to $2,500,000,000 on meat products alone. On a percentage basis it is approximately 33. We spend only 9 per cent for milk and less than 1 per cent for cheese. That this method of expenditure is strikingly fallacious can be shown in more ways than one. During the war, the United States Government, with the consent of the meat packers, urged an increase in the consumption of milk and cheese at the expense of meat products. Dr. E. V. McCollum of Johns Hopkins University claims that the nation would be better fed if the percentage of expenditures on meat and dairy products were entirely reversed. The table also shows how a famous western scientist with a family of three growing children allots his money for food. He consumes between three and four times the amount of cheese and milk used by the average American family.

Not only would an increase in the amount of dairy products consumed be advantageous from the standpoint of nutrition, as is mentioned in another part of this paper, but it would also be much more economical, and this is a point not to be overlooked. If we further study this table, it can be seen that although we spend approximately 33 per cent of our entire food allotment for meat products we receive only about 20 per cent of the total caloric value from it. This condition is almost entirely reversed if the grains and dairy products are considered. In other words, we spend the big bulk of our money for meat products and the grain and dairy products are actually feeding the body. An engineer would never consider firing his boilers in this way, but still we go on with this wasteful method of nourishing the body without giving very much thought to it. The average American family has just about so much to spend for food which makes up about 45 per cent of the total income.

Methods of Advertising Cheese

Concerning the methods that are to be used in bringing these points before the public much may be said and a few points will be considered here. In this respect the United States Government gave us a fairly good start during the war. The Department of Agriculture took up the matter of conserving food very religiously and naturally cheese and milk were given considerable prominence. This has resulted in a small but noticeable movement by way of replacing meat with dairy products. While these points are still fresh in the minds of the American public, it would certainly be wise to take advantage of what already has been done by a strong advertising campaign at the present time.

To put cheese in the diet permanently, it must replace in part some other permanent food. Let us take an example: If we argue the use of cheese with pie, not much of a permanent nature is accomplished. The consumption of cheese in such a case will depend upon the whim of the individual and the fullness of his meal, but if we teach the use of cheese directly in the meal and bring before the housewife a quickly prepared and economical dish, much of a lasting nature is accomplished.

A peculiar inconsistency among men who are interested in the very proposition of increasing the consumption of dairy products is that they overlook to a great extent the value of cheese —they talk milk only.

In carrying on the campaign to increase the use of dairy products, the person who uses milk only in the argument is walking on one leg. As a substitute for meat, especially in the diet of the adult in the light of the above facts, cheese can be used as the main dish for a luncheon to replace meat. For instance, a cheese-stuffed tomato salad is an ideal dish for a summer luncheon, baked cereal and cheese, macaroni and cheese, cheese pudding, cheese croquettes, cheese souffle, etc., whereas milk is used chiefly as a drink.

To vary the milk diet, cheese has a prominent place. A person must consume two or three glasses of milk per day before it becomes important as a factor in supplying large amounts of calcium or energy. If a family with four growing children is to consume the amount of milk specified by dietitians, viz., one quart for each child and one pint for the adult, it would mean a milk bill of approximately $5.00 per week. Anyone familiar with the workers' conditions in the United States knows that it is practically impossible for him to spend this large sum on milk alone. Cheese is excellent in varying and cheapening this diet; it is the nearest food to milk in composition. Among men who like their cup of coffee or among most people in the winter time when a hot drink is required, cheese would be most beneficial in furnishing the nutrients that milk would supply. It seems that the better way is to align cheese and milk side by side and not to lose track of cheese in the discussion.

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* Average 92 families.

Probably the best results can be obtained by attracting the attention of the mother. Every mother, whether she takes interest in her own diet or not, is much interested in the welfare of her children. We hear of more and more cases where the mother says, "Eat this. It is good for you." If the great benefits to be derived by incorporating some percentage of cheese in the diet of the growing boy or girl can be properly put before the mother, she is prompt to see the logical advantage and results will follow. This method of advertising has a dual benefit—it will result in creating among children a desire for milk and cheese, butter, etc., which will remain with them to a certain extent for many years to come.

There is a great future for the cheese industry and every cheese manufacturer or dealer ought to keep in line with the great work of doubling the consumption of cheese in the United States within the next eight or ten years.

What the Preservers and Fruit Products Industry Has Accomplished

National Association at Washington Convention Discusses Ways of Standardizing Jams and Jellies

THE summer of 1918 found members of the Bureau of Chemistry occupied with the problems of differentiation among certain fruit products. There was much popular confusion as to nomenclature; definitions that did not define added to the chaos; jams, jellies, preserves and marmalades were all members of the same family, yet each lacked the individual descriptive designation to fix it definitely in its proper place. The result was that the trade had difficulty in knowing the products as packed.

The Bureau of Chemistry therefore called a meeting of representative manufacturers for the purpose of discussing just these questions. So lively was the interest and so constructive were the suggestions made at this meeting that an executive session followed, in the course of which the National Preservers' and Fruit Products Association was formed.

Marcus Blakemore of Louisville, Ky., was elected president of the new organization; R. U. Delapenha of Poughkeepsie, N. Y., first vice-president; A. Rupert, second vice-president; and Oscar T. Sewell of Baltimore, Md., secretary. The executive committee was composed of W. C. Meechter, J. M. Smucker, Paul Delaney, M. G. Clymer, W. G. Wormley, W. C. Whitman, Mr. Delapenha and L. M. Tolman. Thirty-two firms were accepted as members.

The primary aim of the organization was the protection of the industry, the compilation of workable definitions of products and the standardization of methods throughout the entire industry.

During the first year of its work the usefulness of this association was clearly indicated. Much was accomplished in matters of food legislation and the registration of trademarks, with the Central Coal Committee, with those in the War Department whose business it was to feed the Army, and toward the development of food standards within the industry. No less than thirty-eight technical bulletins were prepared and distributed.

R. U. Delapenha
Mr. Delapenha has recently made a study of the jam and jelly industry in Europe

Another milestone set up by the association was the securing of a hearing at meetings of the Association of National State and Municipal Food and Drug Officials. This was the first instance on record of an industrial organization being called upon to confer with food and drug officials on the subject of uniform food laws.

Cooperation between the association and the National Canners' Association has been very close, the first annual meetings of the two organizations having been held at the same time and place.

The 1923 convention was held in January in Washington, the headquarters of the organization, in order to be in closer touch with food technicians from the Department of Agriculture.

Various phases of the preserving industry were discussed by speakers at the sessions. Mr. Blakemore, in his opening address, called attention to the need of combatting unhealthy competition and to matters still to be acted upon by all the departments of the organization, such as standardization of the products, containers, and freight cases.

Other addresses were given by E. E. Finch, of Karl Kiefer Machine Company, Cincinnati; Joseph C. Colquitt; H. P. Forte, of H. A. Johnson and Company, Boston; Samuel E. M. Crocker, of the United States Department of Commerce; Mr. Delapenha; Walter G. Campbell, of the United States Bureau of Chemistry; A. L. Loomis, secretary of the Washington office of the National Grange; Winifred Stuart Gibbs, associate editor of The American Food Journal; Benjamin R. Hart, William Burgess, of the United States Tariff Commission; Dr. W. W. Skinner, assistant chief of the United States Bureau of Chemistry; H. A. Baker, of the American Can Company, who spoke for George Cobb of that company; J. R. Kessler of C. L. Jones and Company, Chicago; Joseph A. Ford, of Ford and Company, Brooklyn, and John U. Reber of the J. Walter Thompson Company, New York City.

Mr. Crocker's address dealt with the importance of standardizing glass containers. He stated that there is approximately 40 per cent waste in the making of these containers because of lack of uniformity in sizes and shapes.

Mr. Delapenha, as chairman of the Legislative Committee, gave an account of the work accomplished in tariff matters during the year. Satisfactory rates have been obtained on jams, jellies and preserves. He also reviewed the progress of the industry in the United States, and told of its development in Europe, where he studied conditions at first hand during the summer.

Mr. Campbell invited the members of the association to bring their individual problems to the Bureau of Chemistry for assistance. The bureau is interested, he explained, in work of a regulatory nature and research of two primary kinds: First, in the application of chemistry to questions of a cultural kind of direct advantage to the farmer; second, in the food law and its enforcement. This law does not place obstructions in the way of the producer, Mr. Campbell stated, its essence being constructive, requiring only a declaration of the exact content and prohibiting untrue statements on the label.

Miss Gibbs told the members of the need of a home economics department in every manufacturing plant. She pointed out the great food value of jams and jellies, and declared that every housewife should be educated to know that the manufacturer, under proper conditions, could manufacture an article superior to the home kitchen can product.

The great need of systematic advertising was pointed out by Mr. Ford in his address. He declared that ten million families should be educated in the uses and value of jam. He suggested that a survey of the industry might be the first step to determine the feasibility of an advertising campaign.

W. C. Meschter, of the American Preserve Company, Philadelphia; C. J. Earley, of the Florida Food Products Company; Paul DeLaney, of Boston, N. Y.; and Mr. Schnier, of Griggs Cooper Company, debated the question, "Is There Anything Wrong with the Jam Business?" Mr. Meschter declared that the quality of the products was not good enough; that there was too much incorrect labeling; that there was great multiplicity of styles in containers; that the manufacturers lacked faith in each other and failed to compare costs and selling prices; that there was too much price cutting. Mr. Earley also pointed out the lack of faith and co-operation on the part of producers.

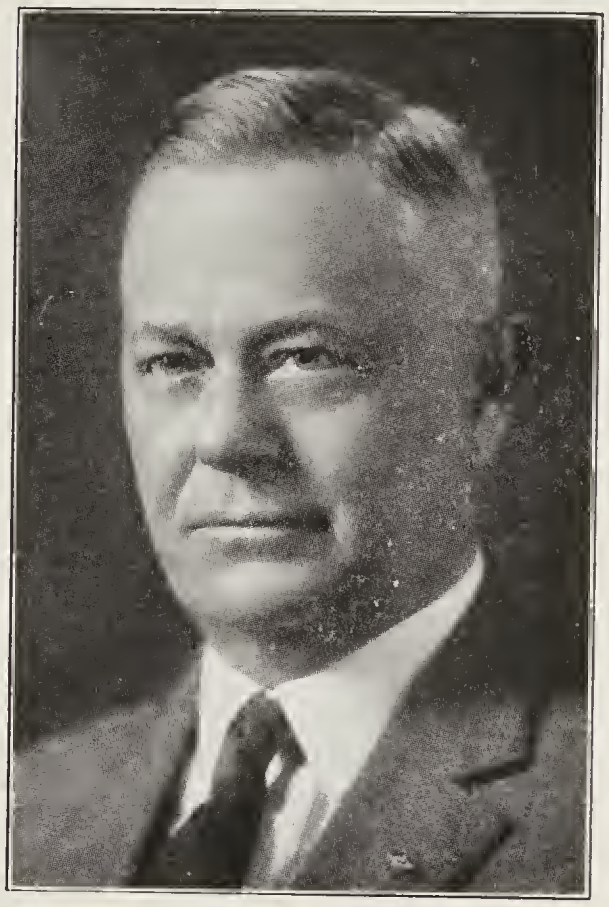
Mr. DeLaney, speaking in the negative, declared that the jam business was good—it was the individuals in the business who were wrong. At least 50 per cent of the goods sold from his company during the last year, said Mr. Schnier, were pure goods, and this he believed was an indication that the industry was on a higher plane than ever before.

The officers elected by the association for 1923 were: president, George Andrews; first vice-president, Paul DeLaney; second vice-president, William Roegge; secretary and treasurer, George Williams.

Charles P. Whiteman

Mr. Whiteman, the new president of the National Food Brokers' Association, elected at the twentieth annual convention held in Atlantic City in January, is a member of the Interstate Brokerage Company, Oklahoma City, Okla.

Mr. Anderson, the newly elected president of the National Canners' Association, is a native of Utah, and is the owner, with his brother, of two of the largest pea canning plants in the country. He has been three times elected a member of the Utah State Legislature, where he assisted in drafting some of the important banking and manufacturing laws on the statutes of the state, and he has served previously as a director and as vice-president of the national association of which he now becomes president.



James A. Anderson

Two More Comments on Uniform Food Legislation

Editor, The American Food Journal:

I have been following with a great deal of interest the comments and suggestions relative to uniformity, which were engendered by your editorial published in the November issue of The American Food Journal.

It is generally conceded by officials, as well as manufacturers, that uniformity of food laws is desirable. The criticisms for lack of uniformity are generally, if not always, directed at the state official with the question: "Why are your laws not in harmony with the federal law?" but never: "Why is not the federal law in harmony with your law?"

I recall reading a report of a hearing before the Senate Committee when the Calder bill was up for consideration. Dr. Alsberg, then chief of the Bureau of Chemistry, appeared in opposition to the measure, and if my memory serves me well he made the statement that the Federal Food and Drug Act was not sufficient in itself as a regulatory measure. I cannot recall ever having any knowledge of a state official appearing in opposition to uniform laws. The question arises who is to furnish this model law that is to be set up for all to adopt? If the federal law is the ideal in food legislation, we have it to aim at; but if it is not the ideal, where are the tablets to be found containing the state officials' ten commandments? It would seem as though we are floundering about without chart or compass, with each individual state as its own pilot, and as long as that condition exists we are not likely to get safely into port.

I am not entirely in harmony with any of the plans suggested, nor am I sanguine as to the possibility of uniform legislation at any time in the near future. If all of the states would agree on a uniform law, and this were introduced in Congress, it would in all possibility be amended so as to be unrecognizable. However, the experiment would possibly be worth trying, but it would require time to draft such a bill. I am wondering if a commission could not be created for that purpose, organized somewhat after the plan adopted in the organization of the Standards Committee. When such commission had completed its work, the report could be submitted to the Association of American Dairy, Food, and Drug Officials for approval. There is neither time nor sufficient sectional representation at the annual meeting of the association to formulate a satisfactory law. Two very full days were taken up by a committee in drafting the uniform egg law, now in force in many of the central western states, which would indicate that when the whole list of food products is to be considered, it would entail a great deal of time and energy, but it is the only plan that suggests itself to the writer at the present time.

It is unnecessary for me to comment on the vinegar law as recommended by Mr. Armstrong, as it is practically the same law or regulation in force in Minnesota at the present time.

A. D. SIBBALD,
Assistant Commissioner, Minnesota
Dairy and Food Commission.

Arizona Standards Are Same as Federal Regulations

Editor, The American Food Journal:

In answer to your letter relative to your editorial, A Concrete Plan for Obtaining Uniform Cider and Vinegar Laws, we wish to call your attention to the fact that our standards for the purity of food are the same as those proclaimed by the secretary of the United States Department of Agriculture, and all regulations passed by him automatically go into effect in this state. There is no vinegar manufacturing industry in Arizona and we have always been able to regulate the wholesale and retail vinegar trade very nicely under the provisions of the federal food and drug inspection act.

JANE H. RIDER,
Director, Arizona State Laboratory.

New York Grocers Study Business Outlook

THE two-day sessions of the thirty-fifth annual convention of the New York State Wholesale Grocers' Association, held at the Hotel Astor February 13-14, were arranged to give the members time and opportunity for interchange of personal experiences in the various phases of jobbing groceries. The reading of official reports was omitted, and the time between addresses spent in discussion of individual problems.

Edwin S. Truesdell, president of the association, in his opening address, deplored the tendency of government officials to find fault with trade associations, and declared that the right kind of business man, with true public spirit, should be less hampered by the government. "In our state we have the Donnelly Anti-Trust Act, which was strengthened by the legislature as recently as 1921," said Mr. Truesdell, "and, having in mind the Sherman Act, the Clayton Act, and the enforcement of these by the Department of Justice and the Federal Trade Commission, we do not see any necessity for a trade commission in New York State, giving any minor official to whom the power is delegated the right to search the business records of individuals, firms, partnerships, corporations and trade associations, whether there is any suspicion or charge against them or not."

"Some Business Fundamentals and the Business Outlook," were discussed by Frederick L. Hoffman, dean of the Advanced Department of Babson Institute. He urged the members of the association to study statistics, and especially the monthly bulletins of the Federal Reserve Board Districts. "There is the utmost need of developing the ability on the part of business men to interpret for individual purposes figures presenting collective aggregates," said Dr. Hoffman.

"The business community as a whole should consider itself the guardian over the business interests of each of its members and extend every possible aid to secure continuity. As an association you might well go so far as to extend the benefit of qualified advice to individual members in financial distress. There is nothing more sad in business history than the passing of a commercial house which, perhaps for a generation or more, has faithfully served its clients and been proud of an honored name.

"The Babson Business Cycle as made public under date of December 21, 1922, or the business barometer indicates that we are on the upward trend, with every indication that favorable business conditions will continue for some time to come. If the cycle should swing back in the near future, there are the strongest reasons for believing that a temporary depression would not materially hinder the trend towards business expansion. I am not inclined to think that we are facing another era of widespread inflation, but there is, without question, a large measure of over-confidence which requires to be held in restraint.

"We are entering upon a new era of both prices and wages. The labor element has determined to maintain its present standard of living and income and there are reasons for believing that individual efficiency has suffered as the result of the war, while the European situation complicates every far-reaching commercial action on the part of this country. Friction and maladjustments in commerce and trade result in higher prices.

"While there may be slight declines in the case of some staple products, I am of the opinion that the changes will not be of very material importance. Rather do I think that it will be well to anticipate a further rise in prices and that a reasonable amount of accumulation of stocks is justified.

"The profit and loss account of every substantial business concern is based upon transactions as a whole. While every item needs to be watched, nevertheless, if the business as a whole is profitable, there need be little concern over losses in particular parts. In brief I firmly believe that we may look hopefully into the future, but that we must guard against inflation and over-expansion."

J. H. Tregoe, secretary of the National Association of Credit Men, in his address, urged the more intelligent use of credit, pointing out the value of turnover in a business as sharply drawn as the grocery business. The extension of credits should be limited, he said, and outstandings kept at the minimum to avoid expansion. It is impossible to predict what will happen in this country a year from now, Mr. Tregoe declared, unless the business men keep their heads and the abuse of credit stops.

In an address on "Taxation and Tariff" Lawson Purdy, formerly president of the Department of Taxes and Assessments of New York City, discussed the influence of taxation on the cost of doing business, especially in New York City, and urged a greater interest in political matters on the part of business men. Moses S. Grossman, founder and vice-president of the Arbitration Society of America, pleaded for a wider recourse to arbitration as an influence for settling trade controversies.

The proposed state trade commission was opposed by S. Frederick Taylor, member of the Federal Trade Commission Committee of the Merchants' Association. The proposed authority for a state commission would apply too broadly, he said, taking in not only associations which might be subject to criticism but every business corporation in the state of New York, good and bad alike.

At the salesman's meeting, held the first evening of the session, addresses were made by H. C. Balsinger, secretary of the National Association of Retail Grocers, on "The Salesman's Relation with the Retailer"; by H. A. Baker, sales manager of the American Can Company, on "Canned Goods," and by Charles Bowers, sales manager of the Windsor Soap Company, on "Salesmanship Today."

The second day of the convention was devoted to executive sessions, followed by the official dinner.

The officers of the association, elected for the coming year, are:

President, Philip C. Staib, of Francis H. Leggett & Company, New York City.

Vice-president, Arthur P. Williams, of R. C. Williams & Company, New York City; Edward P. Cohen, of Jonathan, Levi & Company, of Schenectady; E. Franklin Brewster, of Brewster, Gordon & Company, Rochester.

Secretary, Hugh M. Foster, New York City.

Treasurer, Howard L. Sills, of J. S. Sills & Sons, Inc., New York City.

EDITORIAL

Exchanging Confusion for Confidence

SENATOR BROOKHART proposes that the Senate Manufacturers' Committee be directed to "investigate the manipulation of the sugar market and ascertain the cause of the rapid advance in the price of sugar, notwithstanding the fact that the Secretary of Commerce announces that there is no world shortage of sugar."

The Brookhart resolution further declares that the price of sugar has been advancing rapidly for thirty days, adding that "propaganda is being broadcasted through the public press that a sugar shortage is at hand and the sugar manipulators are reaping a harvest from the consuming public."

In proposing the investigation Senator Brookhart read a letter from Mr. Hoover, in the course of which occurs the following paragraph:

"A world survey made by the Department of Commerce shows that the stocks of sugar on hand from last year, plus the production of this year, were estimated at a total of 19,511,000 tons, whereas the consumption for the year was estimated at 19,035,000 tons, leaving a probable surplus at the end of the year of 476,000 tons. Some misconception has arisen because the estimated surplus at the end of the year showed a decrease from the abnormal stocks at the beginning of the year. There is obviously no shortage of sugar, and moreover an undue increase in price will decrease consumption."

Senator Brookhart then proceeds to advise the housewives of the country to cut down on the quantity of sugar consumed, giving it as his opinion that such a course would "materially break down the manipulation of the sugar market by those who seemed to have a corner on the supply at this time."

All of which may be true. By way of helping the committee perform its task, however, is it not in order for each of the groups concerned to examine its own responsibility and take full cognizance of its opportunity for public service?

The initial responsibility would seem to be a common one, that of acquiring such information as may be available, and so sifting and organizing it as to make it the foundation for a workable program of reform. The Department of Commerce is the logical source of this information.

Next in order would be the work of the individual groups.

Is there not, for example, a real opportunity for the manufacturer to get together with the producer of raw materials with a view to working out a program that might be helpful in avoiding artificial shortages in the future?

As to the housewives, their potential power is undoubtedly tremendous. Properly organized this power may some day be felt as a force definitely dynamic in the economic world. For the present, however, it would seem that the consuming public might render the larger service by joining forces with the manufacturer and the press, first in acquiring knowledge of the sugar situation and second in sounding a note of confidence to offset, so far as is possible, the effect of widespread hysteria.

The fact that the issue involved has to do with an important article of human food makes the formulating of a constructive program supremely worth while, the principle being one that might be carried over into legislative and popular activities no matter what the product.

Psychoanalyzing "Food Poisoning Scares"

A SIGNIFICANT event of the recent "Canned Food Week" was the publication of a testimonial regarding the value of canned foods by the eminent English scientist, Sir William Willcox.

Following the widely noticed cases of food poisoning in Scotland, Sir William conducted an investigation of canned foods, to their complete vindication and to the increase of appreciation of these foods on the part of the public using them.

One interesting point in the investigation is that those who carried it out relied chiefly on the fundamental principles of psychoanalysis, that is a probing to the uncovering of cause and the prompt adjustment of remedy to this same cause.

The layman who UNDERSTANDS the reasons for food poisoning and is informed as to the methods of prevention and treatment will be proof against attacks of hysterical belief in what "they say." By the same token, this individual's sanity of knowledge and viewpoint will be contagious, and its multiplication will go far toward preventing widespread public misunderstanding and fear.

Food manufacturer and research worker should be partners in this campaign and should work shoulder to shoulder in their efforts to keep the consumer informed of the newest discoveries.

Foodstuffs and Statistics

THAT the purchasing public is turning from "quantity demand to quality selection" is the observation of Roger W. Babson, well known statistician.

This fact is especially interesting as it applies to foodstuffs. Every one knows that statistics must be interpreted aright, else will they be misleading to the public rather than informing.

The food manufacturer must go a step further, if he is to live up to his opportunity; he must be equipped to strike a balance between "quantity demand and quality selection"; members of the sales force must be instructed in methods of educating the public in regard to the food value of the product and of its place in a well ordered dietary.

A good illustration of this is a new bran food put out by a cereal company. In the case of this product the officers have been careful to instruct their chemists and other technical workers to avoid carefully the sacrifice of either quality or quantity. A nice adjustment of manufacturing processes makes it possible for the company to offer a product that not only fulfills its mission as a bulk or roughage food, but also preserves the germ of the wheat in sufficient quantities to give it actual food value as well.

Dietary statistics take on new interest when each column of figures points backward to careful adjustment of manufacturing processes so as to insure foodstuffs high in body-building substances, and forward to products that stand for one hundred cents worth of actual food for every dollar expended.

BOOK REVIEWS

Pharmaceutical and Food Analysis. A Manual of Standard Methods for the Analysis of Oils, Fats, and Waxes, and Substances in Which They Exist; Together with Allied Products. By Azor Thurston, Late Chemist to the Ohio State Pure Food and Drug Commission. D. Van Nostrand Company, New York. $4.50 net.

The outgrowth of the author's work as chemist for the Ohio Dairy and Food Department and the Ohio Agricultural Department, Division of Dairy and Foods, the present manual deals with the oils, fats and waxes and allied substances in reference to their constants when pure, their adulterants and the standard methods for the determination of the adulterants.

Detailed directions for use of the Polariscope in determining purity of products, a description of refractometers, an exhaustive discussion of the various methods for arriving at specific gravity of various substances, and general methods of analysis make up the first four chapters.

Then follow studies of oils, fats and waxes, their classification and chemical composition, and similar studies of dairy products, flesh foods and volatile oils.

An outstanding feature of the manual is the careful compilation from original sources of bibliographies of substances treated. These bibliographies cover the prominent English and American journals to January 1, 1922. The author states that in his opinion complete bibliographies of certain journals are of greater value to the student and research chemist than a large number of miscellaneous references.

Vitamin B in the Edible Tissues of Ox, Sheep, and Hog. By Ralph Hoagland, senior biochemist, Biochemic Division, Bureau of Animal Industry. United States Department of Agriculture, Bulletin No. 1138.

This is a valuable contribution to the available data relating to vitamin B in meat. Only a limited number of investigations have been published on the subject and these deal largely with beef and horse meat. In Part 1 the author describes his experiments to determine the antineuritic values of ox, hog and sheep muscle when fed to pigeons; in part 2 he discusses experiments to determine the relative antineuritic properties of the edible viscera and blood from these animals.

As a result of his work Mr. Hoagland has reached the conclusion that meat may be regarded as an important source of vitamin B in the diet. "Pork in particular," he says, "that is, the lean meat, is rich in this vitamin, comparing favorably in this respect with liver and kidney, organs heretofore recognized as containing an abundance of vitamin B. Beef appears to contain a much smaller proportion of the vitamin, while mutton occupies an intermediate position. Several of the internal organs are particularly rich in vitamin B. The heart appears to be the richest in this vitamin, but the liver and kidney have only slightly lower values. The other organs contain smaller quantities of the vitamin. This class of products is an important and economical source of vitamin B."

Feeding, Diet and the General Care of Children. By Albert J. Bell, A.B., M.D., F. A. Davis Company, Philadelphia, $2.00 net.

The outlines given in this book are simple and non-technical, and are suitable for use by mothers and nurses. Principles for prevention of disease in children are emphasized, and sample diet lists suggested for the first twelve years of life, specifying varieties and definite amounts of food, with their food values, for weight and height. Treatment of the sick child is omitted, but causes and symptoms of disease are outlined, and suggestions made that will enable the nurse and mother to work intelligently with the doctor.

Significance of Wheat Hairs in Microscopical Examination of Flour. By George L. Keenan, Microanalyst, Microchemical Laboratory, Bureau of Chemistry. United States Department of Agriculture, Bulletin 1130.

Experiments in classifying flour according to the number of wheat hairs present in a weighed portion of the sample are described in this bulletin of the United States Department of Agriculture. Heretofore the grading of flour by the original method has depended upon a count of the bran particles and hairs in a weighed portion of the sample. In practice, however, Mr. Keenan explains, the identification of bran particles seems to be more difficult for the untrained eye than that of wheat hairs. The former occur in such a variety of forms that an analyst unaccustomed to the differentiation of histological sections under the microscope may be unable to obtain consistent bran-particle counts. The wheat hairs, however, are easily identified and it has been found that the quality present in a sample is an indication of the flour grade.

"It is possible," says Mr. Keenan, "that the number of hairs or hair fragments from the brush of the wheat grain might differ materially, according to the variety of wheat used and the milling operations employed; nevertheless, an examination of a large number of samples representing a great variety of milling practices indicates that flours made from purified middlings material show a low hair count, while flours containing lower-grade mill stocks show a higher hair count."

The Epidemiology of Botulism. By J. C. Geiger, epidemiologist, United States Public Health Service; E. C. Dickson, of Stanford University Medical School, and K. F. Meyer, of the George Williams Hooper Foundation for Medical Research, University of California, and California State Board of Health in San Francisco. United States Public Health Service, Bulletin No. 127.

The authors of this study constituted a committee appointed to conduct an investigation into certain definite phases of botulism, following the outbreaks occurring in California in 1919, which were traced to the consumption of factory-preserved ripe olives. The study was made possible by a grant from the National Canners' Association, the Canners' League of California, and the California Olive Association. Although originally planned to cover the state of California alone, this report includes a study of available data on the ninety-one single or group outbreaks of botulism which have occurred in the United States since 1899.

It is shown that a case mortality rate of 61.7 has been recorded in these outbreaks. In sixty-three the causative food consisted of home or commercially canned plant products; while animal products have been found responsible for nineteen single or group intoxications.

Among other important facts brought out, the investigations demonstrated that spoilage due to B. botulinus cannot always be determined by the appearance or odor of the food. Two jars of home-canned string beans responsible for two outbreaks, according to the report, were spoiled neither by odor nor taste.

Botulism cannot be considered primarily a problem of California, the Pacific Coast states or the western slope of the Sierra Nevada and the Rocky Mountains, the report points out, although its frequent occurrence in the southern section of California is closely connected with the distribution of B. botulinus spores, particularly in the soil. More than one-half of the outbreaks in the state occurred between the months of October and February, owing to the increased consumption of preserved food during that season.

Preserved plant products are usually the cause of botulism outbreaks in the United States, the report says, while in Germany pork and fish products contain the fatal poison. In both countries it comes from the use of preserved foods which are not thoroughly cooked before they are eaten.

THE CONFERENCE TABLE

Some Food Problems Reflected in the Biscuit Industry

By ROY E. TOMLINSON

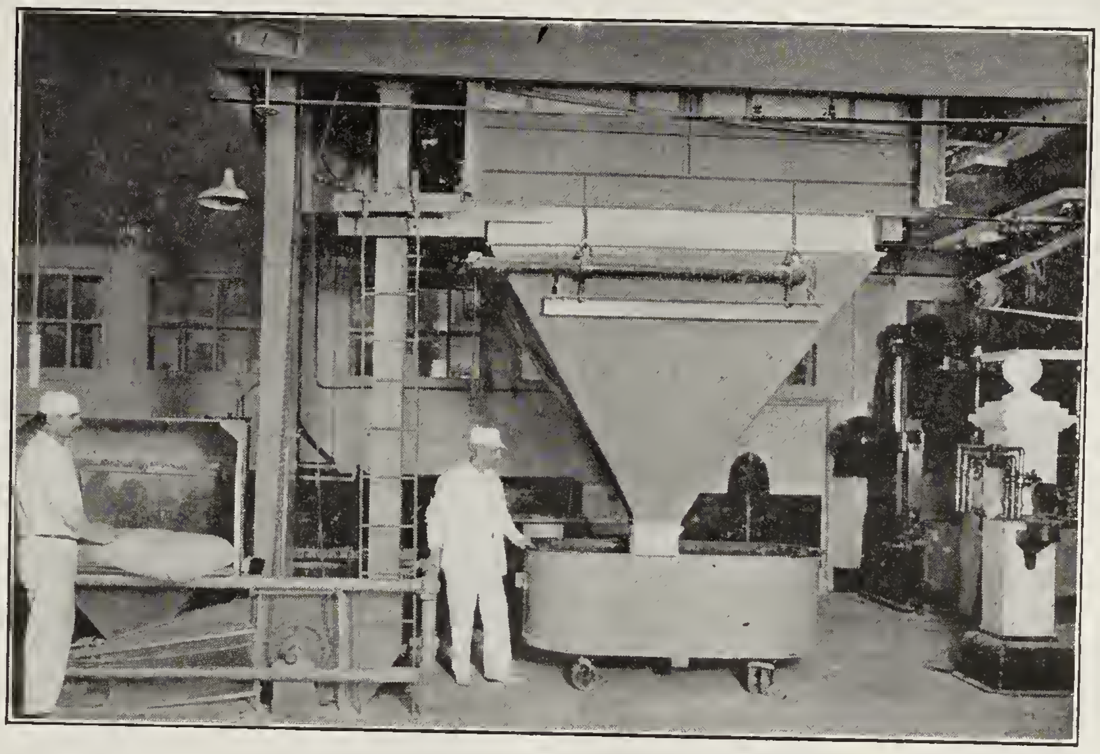
Editor's Note—With this issue the Conference Table is turned over to our readers. Leaders in the field of food manufacture will discuss the broad problems of treatment of raw materials, of distribution and other matters relating to the economics of the industry. We are fortunate in being able to present Roy E. Tomlinson, president of the National Biscuit Company, who opens the series of conferences.

THE pressing problems in the food industry, as in most other industries today, center around distribution. For some time manufacturers have devoted much careful thought and analysis to the problem of lowering production costs, with the result that goods are being produced now at a price undreamed of years ago. But it costs more to distribute goods today. All progressive merchandisers, whether wholesalers or retailers, know that profits come from products which sell readily and steadily. Money tied up in idle goods is unproductive money, and the time, effort and cost of moving slow sellers is out of proportion to the results achieved.

It is obvious that food, of all things, should be moved with all possible speed from the farm or factory to the home. There is, of course, a distinct difference in the problems confronting the man who merchandises fresh vegetables or fruits and the man who sells the same commodities canned. With the former the element of time is all-important.

Our problems are more closely allied with those of the former. Biscuit products are perishable in that they begin to deteriorate as to quality and palatability, though not as to wholesomeness, within a comparatively short time after manufacture and packing. What wonts it to the biscuit maker who goes to the sources of production all over the world to get the best of raw materials, and who transforms these raw materials into biscuit of the highest quality, with every regard and safeguard for care and cleanliness in manufacture and protection, if the goods stay too long on the grocers' shelves and so lose their appealing and appetizing characteristics?

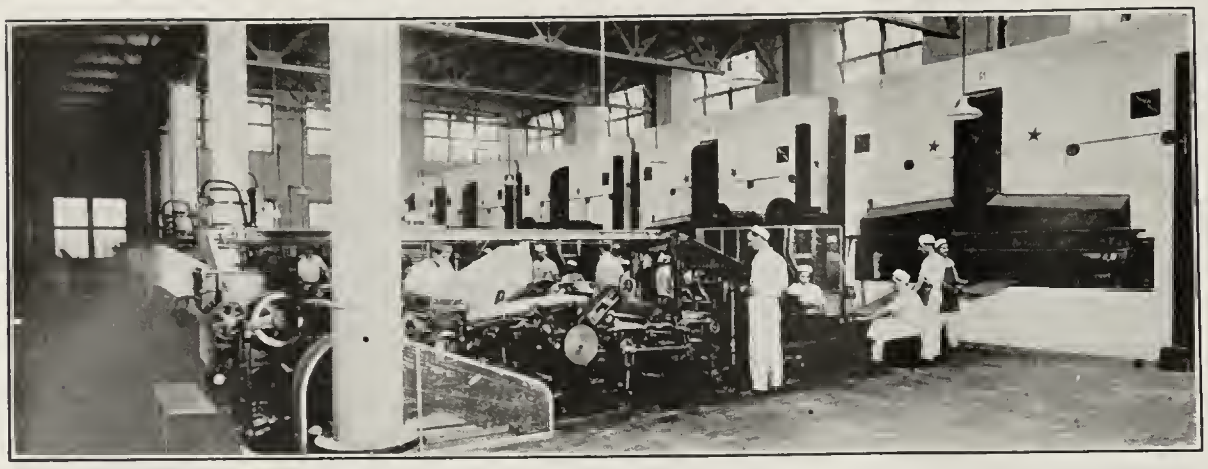
National Biscuit Company from the outset has devoted its energies to producing biscuit of superior quality and in getting them to the consumer as soon as possible after baking. It took crackers out of boxes and barrels and put them into packages and small bulk units—convenient, serviceable, sanitary. From a total of more than two thousand varieties at one time, production has been standardized now to about three hundred. This does not mean that the company is not all the time putting new varieties on the market to appeal to popular taste, but it does mean that when a new variety goes on an old one comes off.



At the extreme left of the sponge mixing department of the National Biscuit Company is the hopper in which the flour is placed to be carried automatically up and into the flour bolter and blender shown in the center. Here any foreign particles, such as the raveling from a bag, are removed, and the blender aerates the flour and restores it to condition at time of milling. The flour is fed into a dough trough and automatically weighed at the same time. The trough is then wheeled under the water controls at the extreme right, where a gauge indicates the amount of filtered water flowing through the faucets.

Forming machines supply cartons to each side of the packing table

Everything possible is being done to shorten the interval from the oven to the table. The internal phases of the problem are pretty well under control; that is, in getting the products from bakeries to distributing branches and from there to stores. This year the company is concentrating more than before on the problem of shortening the interval from store to home. Incidentally, the company delivers its products direct to the doors of more than three hundred thousand retail customers. The sales force of the company from coast to coast and from the Great Lakes to the Gulf, consisting of more than twenty-two hundred salesmen, is waging a persistent, continuous campaign of education with retail merchants to buy in small quantities, to push the popular vari-



A battery of wrapping machines takes care of more than three hundred thousand packages a day

eties on which the speediest turnover may be secured, and to keep close and careful watch on stock in cracker departments.

By reason of the service the company renders, merchants may buy in small quantites and often, keeping stocks fresh and the investment in them at a minimum. It is possible for merchants to keep biscuit moving steadily from store to home by reason of the company's persistent national advertising, the merchandising aids it furnishes in the way of display equipment and accessories, its wide range of advertising helps, and because of the personal service rendered by salesmen. All these tend greatly to speed the turnover, and the constant turning produces the profit. This is a major problem not only of the biscuit industry but of the food industry in general.

More About the Common Interests of Food Distributor and Producer

AS a result of our presentation in the February Conference Table of a suggestion from The Bookseller and Stationer that the food manufacturer cooperate with the publisher in bringing to the attention of the consumer books dealing with foodstuffs, Messrs. Whitcomb and Barrows sent out the following letter to a group of magazines in the food industry:

> The Bookseller and Stationer in its issue for January 15, under the title. "A New Stimulus for Books Sales," suggests that food manufacturers might "cooperate with the publishers in bringing to the attention of the consumer books on food values and those dealing with dietetics generally."
>
> Something in this line is an idea of the writer's that grocers would profit by selling a few books that would increase the sale of their stock. The profit, too, would be at both ends of this transaction.
>
> An instance in point is the book described in an accompanying circular "For Luncheon and Supper Guests," by Alice Bradley, Principal of Miss Farmer's School of Cookery.
>
> This book gives ten menus for entertaining such as most families can afford, the menus providing for eight persons at an average cost of fifty cents per person. But the value to the grocer is right here; each menu gives a "market order" listing the articles required and the amount of each needed. There is his opportunity to help his customers and himself at the same time.
>
> He knows his customers buying ability better than a book dealer can know it, and he need not offer the book where it does not fit. But the chances are strongly in favor of the buyer saving the price of the book on one market order, for a luncheon we will say, and then the satisfied customer has her book with nine more menus and innumerable combinations that she can make herself.
>
> Nothing is farther from our desire than to interfere with the regular book trade. In many cases it might be possible to make a combination between the two stores; the grocer might furnish a "market order" for display in the bookstore window with appropriate signs showing that the book can be bought within and the supplies as shown from Blank and Company. Department stores could do this easily.
>
> But there are grocers in thousands of places that have no book stores, where there could be no possible friction. It is quite likely, moreover, that many women who go to the groceries never step inside a bookstore from one year's end to another. So there is a wide opportunity to develop.
>
> We are sending this letter to ten representative grocers' periodicals. We believe that with ordinary care there is no danger of loss and instead, a growing opportunity for a new avenue of trade.

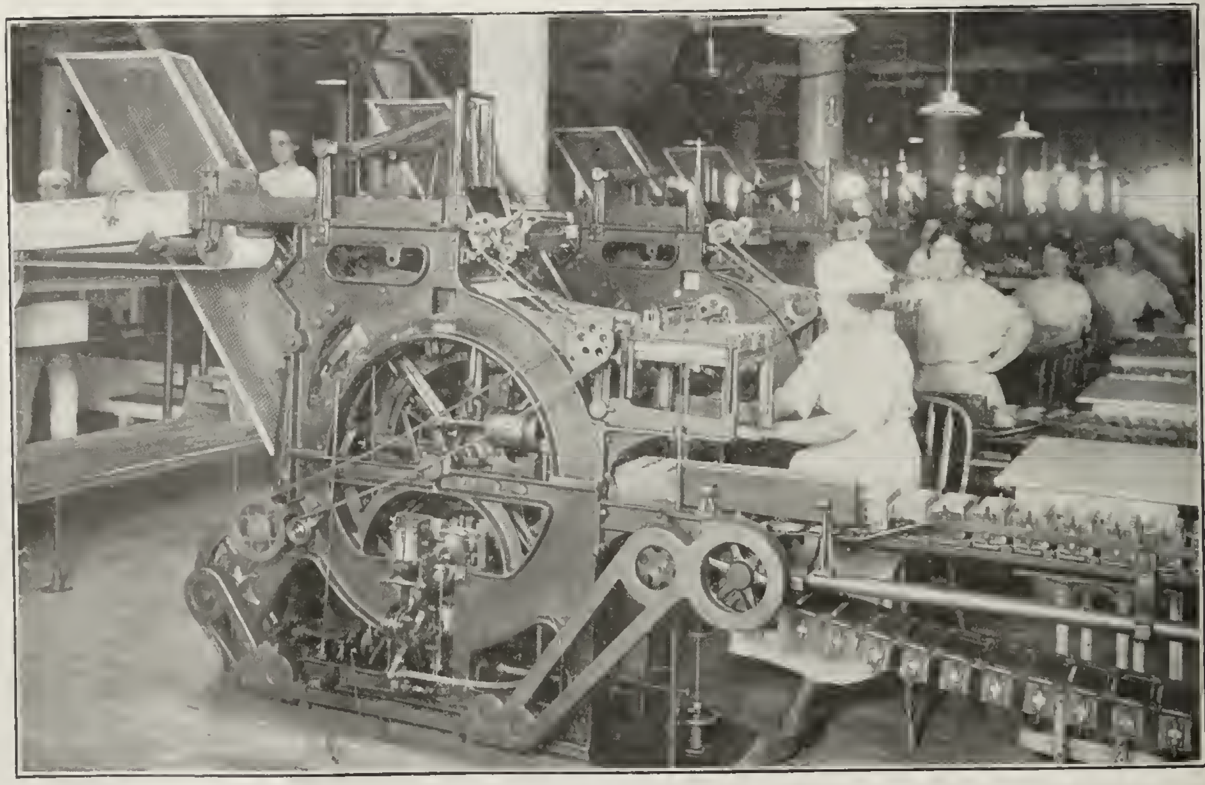
Is not this idea capable of further adaptation, if the manufacturer instructs his sales force as to methods of tying up with booksellers as well as retail food men?

Haugen Butter Standard Bill Becomes Law

THE Haugen butter standard bill was passed by Congress before its adjournment and has been signed by the President. This bill provides that "butter shall be understood to mean the food product usually known as butter, and which is made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter, and containing not less than 80 per centum by weight of milk fat, all tolerances having been allowed for."

The bill was introduced in the House of Representatives by Congressman Haugen of Iowa in the spring of 1922. Butter interests came to an agreement at the hearing that the bill should deal with the fat content only. The bill had the approval of Secretary of Agriculture Wallace and shortly after it was introduced the Joint Committee on Standards and Definitions adopted a butter standard, using the same minimum butterfat content as provided for in the bill, namely, "not less than 80 per centum by weight of milk fat."

The House of Representatives passed the bill on February 24, 1923, and it went to the Senate, where it was adopted on March 3.



A section of the baking floor in the New York bakeries of the National Biscuit Company, giving a view of a cracker cutting and panning machine, with the ovens in the background

FOOD AND HEALTH EDUCATION

Edited by WINIFRED STUART GIBBS
A Department of The American Food Journal

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Teaching Domestic Science In Washington

How the Work is Carried On in the Public Schools of the Capital

By EMMA S. JACOBS
Directors of the Domestic Science Department of the Washington Public Schools

Editor's Note—As a result of our recent conference with Miss Jacobs we are able to present a well balanced picture of Washington's domestic science activities. Directors in other cities are invited to respond to Miss Jacobs' request for information regarding special plans and projects.

I AM glad to have this opportunity to tell of the scope of the work in the domestic science department of our schools, for I hope to learn in these pages what is being done in other places. So after I have taken you on a day's round of visiting in Washington will you tell me what you are doing, and how?

We will visit first the 6B grade, where the girls are learning to keep house. The room, as you see, is a regular school room subdivided by low railings into a four-room-apartment plan, with the end of the cloak room fitted out as a bath room or laundry. The furniture is simple but good, and consists of just the essentials for kitchen, dining room, living room and bed room. The little things with which the rooms are adorned were made by the classes, who also did the household sewing.

Today's lesson has evidently covered the bathing of the baby. Here are the bath tub and toilet accessories and the celluloid doll tucked away, on its side, in the blanket. The class is now divided into groups of two who review previous lessons by putting into practice what they have learned. The first group changes the bedding of a patient, who remains in bed; another cleans the living room; another prepares the table for luncheon; groups in the kitchen are preparing toast and cleaning the silver, while still another group is in the laundry washing the baby's clothes.

The girls are thoroughly interested in this work and enter with zest into every phase of it. It is play, but play with the real things of life. If you question them they can tell you why certain things are done, or what colors to use in dark and in bright rooms, or how to take fruit stains out of napkins. There is also a note of seriousness in their work for the questions asked the teacher show that to some the long, long thoughts of youth have come and they have caught glimpses of the road ahead.

For all work in domestic science one period of one and a half hours a week is allowed, except in the vocational and junior high schools where more time is given.

Let us go now to visit a 7A grade. These girls are evidently preparing a breakfast. One group, you see, is arranging the table, another making muffins, another seriously attentive to separating the white from the yolk of the

These children are learning to prepare the table for luncheon egg for an omelet. The work of the groups spells breakfast. Preceding lessons have taught them to prepare breakfast dishes, and they then made a list of similar dishes and a list of dishes which they knew might be served for breakfast. They planned the menu for the meal they are preparing and have apportioned the work. They have decided who is to compose the family and what duties each shall have, and they may sit in judgment on the way in which each carries out her part if the whole is not satisfactory.

Let us now see what the 7B girls are doing. Evidently going on a picnic, for here are the lunch boxes and an array of material suggesting a picnic lunch. The eagerness of the class makes one certain that they are going out to the park when their boxes are packed, though they often have more fun "making-believe' the school room is a picnic ground and inventing games to play. These girls have been studying how to put up lunches for those who go to school and to work and what to buy to supplement the lunch brought from home. This is the last lesson of the series.

From work on the board the 8A girls are studying the home luncheon for the family of moderate means. They have learned that there should be one hot dish, that the meal should be simple, that it should require but a few minutes for the busy house mother to finish the preparation and put it on the table at noon. Hence the dishes should be such as can be made while the kitchen work of the morning is being done. After this a series of dishes for a more formal luncheon will be studied.

Now let us quickly visit several 8B grades. Here is one studying "what a girl ought to know about food so she will be able to keep well." Here is another whose subject is "How much does it cost to feed me?" They are calculating the cost of the food they ate yesterday to find out the cost per week, month and year. Some are very much interested in this and begin to take an intelligent interest in the family finances.

This next class is going to entertain the school principal and its teacher at a family dinner in the cooking room. One girl will be host, one the hostess, and two the family, with the principal and the teacher as guests. This is their graduation from the elementary cooking school.

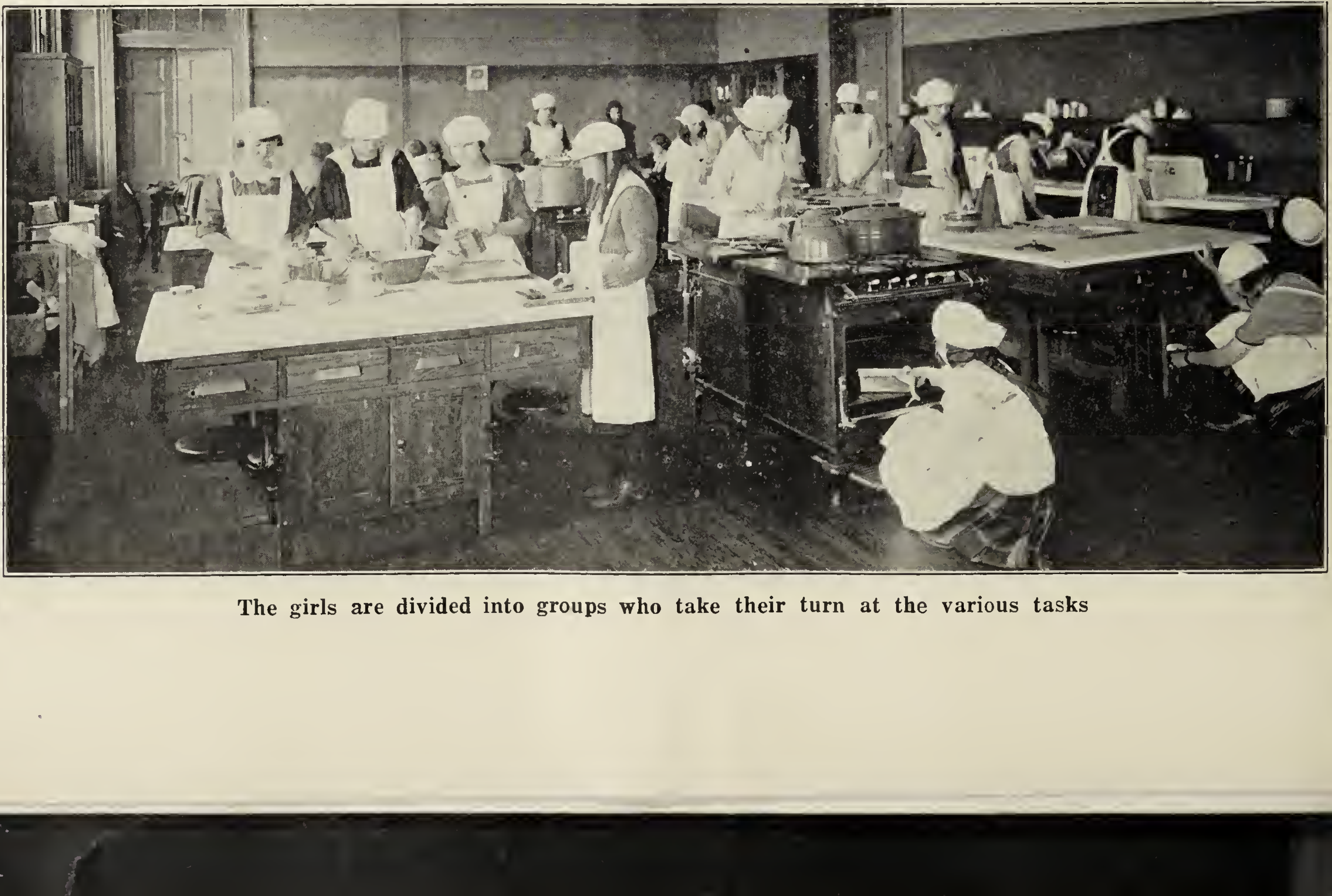
Let us now go to see a nutrition clinic or class in operation. This is a group of twenty children from the third, fourth, fifth, sixth and seventh grades who are 10 per cent underweight. The group is under the direction of a physician but a teacher of domestic science measures, weighs, determines the percentage of underweight and gives all the instruction. There is a nurse as assistant whose duty it is to be present during the physical examination of the children, to take the doctor's orders and to follow up the cases which need surgical treatment. The plan followed is the well known Emerson Plan.

At present the teacher is busy weighing the children, taking each one alone so she may talk to him to win his confidence, for only when there is this relationship is she able to ask them the intimate questions which will reveal the cause of the underweight condition. It is not all due to lack of food but to improper combination, to fancied dislike for certain foods, to overfatigue, to fear of some teacher or person, to worry over lessons and to wrong habits of living. She coaxes this one to promise to do certain things, particularly to rest; she persuades the next that there is nothing better than oatmeal for breakfast or vegetables for dinner. Later in the day she will have all the class together for the physician to see and she will tell him what this one did to gain so much. After her tonsils or adenoids were removed she had only to do the things she was told to do in order to increase her weight. Then, going down the line, she will tell something about each one. The doctor will add his word of praise or disapproval and admonish the parents who are present that it is their business in life to see that the children have a chance to be normal, and tell them of some of the ills of adult life which have been traced to the conditions found in this class. On certain days the teacher will talk to the mothers of the children about the things they may eat and how to coax them to eat what is provided. Two or three times each year I visit the class to talk to the children and to parents.

There is still another class to see. This is the school for subnormal children. We may find them making beds, cleaning a room or cooking, or even furnishing a house or making menus for the meals of the day with pictures cut from magazines.

Finally, we will go to one of the high schools where we will find the work of the grades being carried on a few steps farther. Here is the study of house furnishings with often a single room (belonging to one of the girls) being actually remodeled and refurnished as the center for study. Calculation of the cost of this is the basis for studying the costs of a whole house. We find them making and studying floor plans for good arrangement, to save steps, to install conveniences, for arrangement of furniture. They may be planning meals for special occasions, for special cases, for definite cost and calories, or preparing and serving such meals to gain experience which is to be the background for their own ventures in homemaking.

The work is elective in the high schools but a part of the regular curriculum in the elementary schools.



The girls are divided into groups who take their turn at the various tasks

Teaching Business Girls to Live

A Course in Junior High School Helps the Girl to Earn and Spend Her Money

By ESTHER H. JONAS
Columbia Junior High School, Washington, D. C.

DURING last year, we inaugurated, in our junior high school, a special eighteen-weeks' course of work for the ninth grade business girls. The main objectives of the course are to apply the two general educational theses: First, "to teach the girls to do better those desirable things they are going to do anyhow"; and, second, "to reveal higher activities, make them desired and to some extent possible." The time allotment is, of course, too short to vitalize the work to its fullest extent; however, we have felt it better to send on the girls partially prepared for these life problems rather than not at all. The course aims to develop not skillful workers but rather an appreciation of the value of personal appearance, thrift, health and the art of right living in relation to the life of the business girl, and to reveal to the girls some of the commercial possibilities of the field of home economics.

The work was divided into three six-weeks' units and assigned to the domestic art and domestic science departments. The business high school, although unable to offer their girls a similar course allows our girls one major credit for this one hundred and eighty hours of work.

I will deal in detail here with only the six-weeks' unit in domestic science. Before planning the course we asked ourselves the question, "What are some of the things these girls are going to do that we could help them do better?" From this a list something like this was evolved: to live, to eat, to dress, to apply for a position, to earn and spend money; to select a place to live.

With such a list as this as a basis we divided our six weeks into four units—thrift, shelter, health, food. These units were not sharply divided for one ran into the other. We tried to teach a wise selection of food, proper care of the body in health and sickness and the importance of thrift. Throughout the course as much vocational information as possible was given.

Unit 1. Thrift, or earning and spending. Time allowed, five double periods.

The girls were first requested to list the positions they expected to fill at the end of their schooling, and the salary expected. This introduced a discussion as to how they could fill better positions and the benefit of further education. We studied the various types of business women to see which reached the higher position and salary. Through this the girls acquired an insight into the effect and value of proper personal appearance in business life.

Taking the average salary that the majority of the girls would receive, which ranged from $1,000 to $1,300, we asked them to list the things they thought it would have to be spent for, and to make what they considered a reasonable division of the money, stating first whether they expected to be totally or only partially self-supporting. From these lists we built up our budget divisions, and then divided the class into committees to work upon the percentage division of the income according to the budget topics. Several days were allowed for gathering the information.

In presenting their reports each group was required to defend its division. For instance, the group on shelter presented the cost of renting an apartment or a room, as compared with rooming and boarding at one place. Likewise the group on food presented the cost of eating at a cafeteria, preparing the food, and boarding at home. These two committees worked together and from the reports drew their conclusions as to a reasonable allowance for the food and shelter part of the budget.

Another committee worked out the clothing budget. The savings committee had to consider types of saving and its necessity. In the same way each group was required to make detailed explanation of how it reached its conclusions. From these reports we built a budget for the girl. This naturally led to a discussion of how to tell whether or not they were living within the budget and gave opportunity for teaching the value of the expense account and how to keep it.

Unit II. Shelter. Time allowed, five double periods.

Care in the selection of a place to live followed the budget work. The work was given by discussion and report. Some simple housewifery was taught in connection with health and cleanliness. A few practical lessons on household sanitation, ventilation, sweeping, dusting, care of beds and bed making were given. We tried also to give the girls an esthetic appreciation of home decoration and to apply in a practical way the work given in the art department.

Unit III. Practical Hygiene and Care of the Simple Emergencies. Time allotment, ten double periods.

We attemped in these two weeks to create not only an understanding of the health fundamentals but also the value of personal appearance and cleanliness. We started with the symptoms and causes of sickness, care of the invalid's bed, bathing the invalid, necessity for cleanliness of the body in health as well as in sickness, care of the bed and body linen, how to take temperature, pulse and respiration. We then taught the simple home remedies such as hot and cold applications, poultices, the care of simple ailments, such as fainting, shock, colds, sore throats, cuts, burns, bruises. These lessons were given by demonstration followed by practice work. Then followed lessons on care of the teeth, hair, skin, nails. Hygiene of clothing was taken up in the domestic art department.

Unit IV. Food in relation to health. Time alloted, ten double periods.

This work was begun by having the girls secure their examination cards from the physical training department and comparing the weights found there with the average weights for their years and statures as shown on the weight charts. The weights were listed as normal, underweight and overweight. The very natural question of "why" was immediately vital.

We next considered the dangers of the underweight and overweight conditions and close upon the heels of the "why" came "How can I help it?" First we classified the foods and discovered that the girls were not eating well-balanced meals; next we taught the "calorie," its meaning and importance. Each girl then worked out her own energy requirements. The problem was to determine whether she was getting this amount per day. We weighed and measured out the 100C portions of the most common foods and compiled the table from which each could make her calculations.

Having kept a detailed record of all she ate for several days she could easily determine the number of calories. Many discovered that the energy of the food eaten did not equal the energy required, so the "why" of underweight was answered. The problem of how to correct this condition was then faced and in working it out we were able to teach the "balanced ration." They then planned diets for both the underweight and the overweight girls with great interest. By this time the "normal" girl was clamoring for attention, and we planned balanced meals for her. These latter were also planned for thrift, actual cost and time. This cost was compared with that of food purchased at cafeteria, school lunch room and hotel. Some practical lessons in preparation of meals were given, the meals chosen being the best of those submitted by the class.

Although we feel the time has not been long enough for us to make the work as worth while as it should be, yet even this small amount has helped to send them forth prepared to do the things they are going to do and with some appreciation of what is meant by wise living. That the work has been slightly exploratory and revealing we know, for several of the girls, after completing this course, changed their plans for attending the business school and chose a composite or a technical school instead, with the expectation of entering the commercial field in one of the other lines revealed to them.

"A Day in Happytown"

A Health Play for Eighth Grade Girls

By ELIZABETH LEWIS

Grant School, Washington, D. C.

THE idea for this play was obtained from a short story used in one of the health talks with an eighth grade class of girls in the domestic science center at the Grant School. One girl was anxious to tell the story to a younger sister and for this reason had jotted down the names of each new character as it appeared in the story. I felt that we could get a great deal of pleasure from acting a story that so aroused the interest, and I therefore suggested making it into a play, so that all the little brothers and sisters in the lower grades could hear it. It seemed to be a very good time to present it for the teachers were all trying to teach health habits and were starting health charts as they usually do at the beginning of a new semester. The girls quickly wrote the story in dramatic form, typed it, assigned characters and staged it. The play was given in one room with several grades watching at a time, and had to be repeated before all the grades had seen it.

"A Day in Happytown"

Scene—One end of a school room, a bed next to a window, a small table near the bed, a screen to separate the outdoors from the indoors.

Characters—Mrs. Easymother, Anemia, Dr. Goodhealth, Sallie Sunshine, Fannie Freshair, Betty Bath, Susie Soap, Hilda Hairbrush, Tilly Toothbrush and Gertrude Goodfood. Each character wears a card around her neck bearing her name.

(Enter mother and daughter—right)

Mrs. Easymother—"You are twelve years old, Baby, and as yet have no name. What would you like to be called?"

Baby—"Anything will suit me, mother. Let's walk along. Oh, see the dear little house, mother. Please see if we can live here."

Mrs. Easymother—"All right, if you like it, we'll stay. (They go to the other side of the screen.) But there is too much sunshine in here. If we pull down these curtains and close the doors, I'll like it very much."

(Two little people walk in while Mrs. Easymother says this.)

First Person—"Sally, see our new neighbors."

Second Person—"Yes, I think the little girl has Anemia, don't you?"

Mrs. Easymother—"Baby, that is such a pretty name I think I'll call you Anemia."

Baby—"Yes, I like iti, too. If I felt better I'd call those children in to play, but mother, I feel so sick."

Mrs. Easymother—"Poor child. The journey here must have been too long. Come, I'll put you to bed. (Feels of Anemia's forehead.) You have a fever; I guess I'll send for the nearest doctor. (Goes to door.) Little girls, will you send the nearest doctor over here."

First Person—"All right." (They run out.)

(Enter Doctor.)

Doctor—"Well, well, so you are our new neighbors. Who is sick?"

Mrs. Easymother—"Where is your medicine case? My daughter, Anemia, is sick."

Doctor—"I should think she would be sick with that name. Her name should mean that she is well, as mine does. I'm Dr. Goodhealth. I'll send in some little people to make Anemia well."

Mrs. Easymother—"I don't want to pay for any nurses, Dr. Goodhealth."

Doctor—"There are no nurses in Happytown. These are your friends." (Exit.) (Rap on door.)

Mrs. Easymother—"Who are you?"

Sallie—"Don't you know me? I'm Sallie Sunshine. Dr. Goodhealth sent me here to see your litle daughter who is ill."

Mrs. Easymother—"Come in."

(Sallie goes to the window and raises the curtains.)

Anemiia—"Oh, the sun feels so good and warm. I like it."

Sallie—"Mrs. Easymother, one way to cure Anemia is to keep the curtains up and let the sunshine in."

(Rap at door. Mrs. Easymother opens it.)

Mrs. Easymother—"How do you do. Who are you, little girl?"

Fannie—"I'm Fannie Freshair. Dr. Goodhealth sent me to help you."

(Fannie opens window.)

Mrs. Easymother—"Oh, don't do that. Anemia will catch cold."

Fannie—"Anemia will not catch cold because there are no colds in Happytown. It has been so long since any one here has had a cold that only Dr. Goodhealth remembers it."

(Anemia throws off blanket.)

Anemia—"I like the sunshine and fresh air, mother. Goodby, girls."

(Exit Sallie Sunshine and Fannie Freshair.)

(Enter Betty Bath and Susie Soap.)

Mrs. Easymother—"Goodness me, and who are you?"

Susie—"I am Susie Soap and this is Betty Bath. I thought everyone knew us. (Looks at Anemia's hands.) My! My! How often does this child bathe?"

Mrs. Easymother—"I really don't know. I let her bathe when she wants to. I try to be easy on her for she is so sickly."

Betty—"If you would be hard on her for a while it would do Anemia good."

(They rub and scrub Anemia.)

Mrs. Easymother—"Not so hard. You will hurt her."

Anemia—"Oh, mother, I like it."

Susie—"Mrs. Easymother, if you'd do this often, Anemia would soon be well. Goodby."

(Exit Susie Soap and Betty Bath. Enter Hilda Hairbrush and Tilly Toothbrush. Hilda looks at Anemia and laughs.)

Hilda—"Does Anemia ever brush her hair?"

Mrs. Easymother—"Oh, yes, when she feels like it."

(Hilda brushes Anemia's hair.)

Mrs. Easymother—"She really looks better."

Anemia—"I feel better, too."

Tilly Toothbrush—"I am Tilly Toothbrush. I am going to look at Anemia's mouth. (Looks in mouth.) Come here, Hilda, and see these teeth."

Mrs. Easymother—"I never bother to look in her mouth. Those are only her baby teeth anyway, and they don't count."

Tillie—"Oh, yes, they do! Four of them are not baby teeth at all. They are her six-year molars. This is how to tell them: They are number six from the front, two upstairs and two down. But these are all covered with germs and she can't be well as long as germs are in her mouth. Anemia, if you don't keep them clean you will have a toothache."

Anemia—"All right, Hilda and Tilly, I'll try and do as you say. I really feel so well now I think I'll go outdoors."

(Runs out of house and meets four children. They form a ring and dance. Anemia falls down and cries.)

Children—"Apples and Peaches,
Pumpkin Pie,
No little bump shall make me cry."

Anemia—"I feel all right, but I can't run the way you do."

(Gertrude Goodfood is one of the four children.)

Gertrude—"Anemia, what do you eat? Do you eat oats?"

Anemia—"Oh, no, I don't like it."

Gertrude—"Have you any milk and eggs in your house?"

Anemia—"Yes, but I don't eat them. I eat lots of toast and tea and mother lets me put sugar in it and soak the toast in the tea until it is nice and soft and sweet."

Gertrude—"I eat oatmeal every day."

Sallie Sunshine—"I drink milk three times a day."

Fannie Freshair—"I have an egg for breakfast."

Gertrude—"If you try to eat oatmeal and eggs and drink milk, see if you won't soon be able to run and jump as we do. I'm Gertrude Goodfood and I know you will."

Anemia—"Since you eat oatmeal and eggs and drink milk, I am going to do it, too. (Mrs. Easymother calls Anemia.) Yes, mother, I'm coming."

(Runs into house and sits down at the table.)

Anemia—"Mother, I want some milk to drink instead of tea. I'm going to make my legs strong and be as rosy and well as all the other children."

Mrs. Easymother—"Yes, dear, your cheeks are pink now and you look better than you did. I'm glad we came to Happytown to live. Now you'll grow up to enjoy living instead of having headaches as I do."

(Enter Sadie Sleep.)

Anemia—"Who are you?"

Sadie—"I'm Sadie Sleep and I just peeked in to see what time you went to bed. All the little people of Happytown go to bed early so that they will be bright and happy the next day."

Anemia—"Since I live in Happytown, I want to do what the other children do so I'll jump into bed right away. (She covers herself up.) Good night, mother. Good night, Sadie."

(Exit Mrs. Easymother and Sadie.)

Mrs. F. E. Buckingham, domestic science teacher in charge of nutrition classes in the Washington schools, is in charge of a nutrition class for underweight children, varying in age from eight to fourteen. While weighing the children she has an opportunity to question them and to advise them about health and food habits

Weight As An Indication of Health

By MARGARET GUEST

INTEREST in the question of underweight and overweight started in our school last winter when a nutrition class was formed. None of the girls in the class to which I am referring belonged to that class but from the short discussions which we had during the class period, they became enthusiastic about their individual weight. We therefore began a nutrition class of our own in connection with the lessons in cooking.

The first thing was weighing and measuring of the girls to determine normal weight and to classify them into normal overweight and underweight groups. Fortunately for the problem involved all three classes were represented. The next step was to find out the causes for these varying conditions. As this was a cooking class we attacked it from the food side. The girls brought in a list of their food with the amount for a day. From the tables on the board they estimated their heat requirements, and from tables the number of calories available from the food eaten. They found some of the underweight ones were not eating enough. We tried to find out what other factors might be retarding these girls. General study of the function of food and its classification accordingly was taken up, and the food of the underweight was reviewed in the light of this knowledge.

These same girls are now in the last semester of their elementary school work and are more experienced in dietary problems. They are attempting to prescribe diets for those who have not yet attained their correct weights. Each month all are weighed and there are now only four girls out of fourteen who do not weigh what they should, three of these being about fifteen or twenty pounds overweight, the other being very small for her age and about five pounds underweight. Just now we are paying particular attention to the overweight ones and are trying to help them to form a diet which will not be injurious to their health. Exercise has been recommended and one of the girls has gone so far as to get a book with a list of "setting up" exercises which she does every morning.

By the time they leave in the spring we are hoping that all will have reached their normal weights, and they promise to do all in their power to keep there. Those who have done so say they feel much better. We all see how much better they look and work.

A Practical Demonstration in Cooking for Health

By RUTH E. TUCKEY

Teacher of Cooking, Washington, D. C., Public Schools

IN the first few lessons of our course we covered very briefly the vast field of human nutrition. We likened our bodies to the engine and discussed its needs and its functions. We said that we needed foods to build and repair, to give us heat and energy, and lastly to regulate just as the oil regulates an engine. Some foods which we eat do these things and some of them do others; so in order to make it easy for ourselves we made lists or classifications under each heading. To tell whether we are properly supplying our body needs we weigh ourselves and by comparing this with what we should weigh we can find just how well we are supplying these needs.

It was here that we introduced our project and because I was underweight I worked along with the girls. We each took a piece of graph paper and pasted it in the back of our books. Then we were all measured and found our proper weight from a large weight and height chart. At the top of our individual charts we put our names, weights, heights, and ages. Then all of us were weighed and our actual weights were indicated on the graphs with a large red dot. If we were underweight it was entered at the lower edge of the graph; if we were overweight it was placed at the top so our line could drop. Each week we were all weighed at the same time of day and, as nearly as possible, in the same clothes, and our line was plotted on the graph using as many of the blocks as were necessary. It was most interesting to all of us to watch our lines rise or fall as the case might be and, of course, each girl was most interested in the teacher's graph and in her own.

In order to know about what we should gain we kept a record of our food for the week. These lists we brought together and discussed in class in regard to their food value and whether or not they supplied our body needs. It was not strange that we found ourselves committing the crime of too much candy, pickles, pastry, and the like. This dscussion we linked up directly with our menu planning and it of course brought this home very clearly. Special stress was quite necessary on the use of green vegetables and this was the greatest problem of all.

Of course our work was not only theory but a maximum of practice. We went through each course in the meals and cooked some dish relating to each one. The special problem for each girl was to find some way in which she might make her particular dish palatable to herself and to others. Originality was greatly encouraged and some of the results were very interesting. Let us take, for example, the lesson in which our main food was spinach. I think we all realized that this would be a difficult lesson but several different dishes were made, such as spinach loaf, spinach balls, spinach salad, spinach soup, and molded spinach with hard cooked eggs. Of these the spinach soup was most popular and we found the reasons for this to be: first, that it was well seasoned with pimento, green pepper and celery seed; second, because the spinach was put through a strainer, and third, because the dish was most attractive. In every lesson each girl made it a point to prepare something in a palatable way.

As the close of the project we found we had accomplished the following:

1. A general gain in weight had been made.
2. Green vegetables and fruits had been introduced into the diet.
3. We had broken up to some extent the candy habit.
4. The girls had come to realize the value of the attractively served dish.
5. We had made a concrete demonstration of the value of foodstuffs in the diet.

On the part of the teacher a great deal of preparation was required. She it was who directed the class, formed its background, handled the weighing and measuring, and suggested methods in cooking and preparation. We kept our work up for about fourteen weeks. During that time the interest never fagged and good results were seen, not only in our own work but even in the regular class room.

A Seventh Grade Party

By CORA GUEST

Van Ness School, Washington, D. C.

THE school in which this plan was carried out is primarily a cooking school, but the room is so divided as to form a small apartment. The furniture suitable for a bedroom, living room, and dining room, as well as the necessary kitchen equipment has been provided. The girls in the class were of the seventh grade and beginners in the work.

They had had a few cookery lessons and some in laundering when the teacher asked what else they should know in order to be good housekeepers. One of the girls answered, "Cleaning." Another promptly said that they would certainly want the house clean because they might have company.

This statement brought up the idea of entertainng and a party immediately came into the minds of almost all of the class. Couldn't they clean up as if they were preparing for a party, and then have a small social affair with simple refreshments?

It happened that one girl was leaving the city the day after that scheduled for the party. This added another incentive for giving it.

One of the regular class periods was given over for instruction in cleaning in preparation for the party, and then the class took charge. They appointed two girls to act as hostesses and divided the cooking and other work among the other members.

The day of the party arrived and the work was done splendidly. Even though we served only cocoa and cinnamon toast, it was done with great dignity. It was made a fitting farewell to a sweet little girl.

A Milk for Health Song

TEACHERS who are seeking songs to be used by members of their nutrition classes may be interested in one that was very successful during a recent "Milk for Health Campaign" in New Orleans. The Dairy Division of the United States Department of Agriculture, the New Orleans Association for Commerce, the New Orleans public and Catholic schools, the Louisiana State University and the City Board of Health were among the organizations in the campaign.

(To be sung to the tune of "Peggy O'Neil")

Doc-tor Milk is a ver-ry wise man,
Lis-ten what he has to say,
For he'll put you wise,
So you'll rec-og-nize,
The value of Milk today:

Chorus

If her eyes are dim and sad,
She needs some milk.
If he's a thin and puny lad,
Why, he too, needs some milk,
Milk gives kiddies some vim and some pep,
It makes the o-old folks wa-tch their step.
It gives personality, lots of mentality,
M-I-L-K. Milk.

Director of Home Economics in the Public Schools of Philadelphia

As professor of domestic science both at Kansas State Agricultural College and Purdue University and dean of home economics at Oregon Agricultural College, Mrs. Henrietta W. Calvin established herself as an educator. It is as specialist in home economics for the United States Bureau of Education, however, that she has had the widest opportunity for enlarging her circle of professional and personal friends.

Besides assisting with the editing of various department bulletins, Mrs. Calvin, during her work with the bureau, has written several important pamphlets on home economics subjects, two of which are listed in our service to teachers.

For eight years this home maker and educator has stood ready with constructive counsel for all who wished to consult with her. The fact that she has acted as friendly adviser to teachers in forty-eight states means that Mrs. Calvin has gathered a rich fund of material, has become acquainted with domestic science activities covering a wide range of questions and problems and has sat in at home economics conferences with leaders in every branch of the profession.

In the autumn of 1922 Mrs. Calvin resigned her post with the Bureau of Education to accept that of director of home economics in the public schools of Philadelphia.

It is with satisfaction that we announce that Mrs. Calvin is among the other notable domestic science women who are helping us build up Food and Health Education. During a recent conference with her and Miss Johnson, the editor talked over various interests of the domestic science teacher, with the result that we are able to give our readers the following papers on the teaching of health through home economics in Philadelphia schools.

Cooking Lessons for Trade School Girls

By NAOMI QUINTER HOLSOPPLE
Tilden Junior, High School, Philadelphia

It has been some years since the subject of cookery became popular in public school curricula as a result of the first attempt at analyzing the job of homemaking. As the need for this subject was recognized it was investigated, studied, and established as a science. At that time the average educator agreed to the premise that it is well for a girl whose definite object is matrimony to know something of cookery. But as more and more women come to enter upon vocations other than home-making, the emphasis formerly placed upon it was rather lessened, the general opinion being that since the actual need for cooking is often postponed the all too short school life of the girl should be filled with general subjects which she obviously needs as a pre-vocational training.

It is still true that 80 to 90 per cent of the girls who go through our schools need this work eventually in some form of home-making. But as in an increasing number of cases it is a deferred vocation the question of the immediate needs of the girls must be considered.

We can see the weight of their argument, and indeed augment it somewhat out of our own knowledge of the girls who leave our classes as early as possible to enter the industrial world.

We teach hundreds of lessons in bread-making, and believing in the value of such lessons for groups of girls who can use that knowledge we hope to teach hundreds more, but we cannot expect bread lessons to function in most of the homes of the towns and cities where the bread wagon stops every day.

Any subject taught in school the object of which is to form skills, habits or attitudes which better fit the child for a useful life is called cultural; therefore we class cookery with English, music, or history as a cultural subject. For certainly healthful living is the foundation and starting point of happy useful lives.

Domestic science as taught in the public schools should have four objectives: first, the accumulation of facts; second, the forming of standards and skills; third, the utilization of these skills; and fourth, the application of this knowledge of their daily lives. So far we believe that three of these have been achieved by the teaching of cookery. The girls in our classes can answer questions as to how and why we cook foods. We have watched a rise in their standards of cleanliness, and an increased skill in their manipulation. We work for, and encourage the carrying out at home of these things taught in the classroom. But heretofore we have not done enough to make this work actually function in the daily lives of our girls. We have come to ask ourselves the question, Do they apply what they know of foods as an ordinary rule of hygiene?

How many girls in our cookery classes realize how foolish it is to sit down to a good dinner, to glance over the table and mentally decide upon one favorite food to make that meal? How many girls less fortunate perhaps, as to the economic condition of their homes, know why a pickle and a bologna sandwich do not form a sufficient lunch, or how to choose wisely from a cafeteria lunch counter? How many girls starting out to work undernourished and underweight, know the relation of those conditions to the tragedy of cancer, tuberculosis, and of all the army of malnutritional diseases lined up against their health and life. And we may well consider the

Comments of Readers of The American
Food and He

Pleased With Material on Health and Nutrition

"I am in receipt . . . of a copy of the new section, Food and Health Education, of The American Food Journal for January. *I am quite pleased with the material on health and nutrition* and enclose a list of the home economics teachers of Georgia. I will greatly appreciate your sending any educational material to these teachers."

EPSIE CAMPBELL,
Supervisor of Home Economics, Georgia State Board for Vocational Education.

Will Find Section a Great Asset in Her Work

"Enclosed find twenty cents for which please send to my address two copies of the Food and Health Education section of the January issue of the Food Journal. I have charge of home economics in the Hutchins Intermediate School in Detroit, and *I know I'm going to find this section a great asset in my work.*"

BERTHA BALLARD,
Detroit, Mich.

Teachers Appreciate Helps in Home Economics Teaching

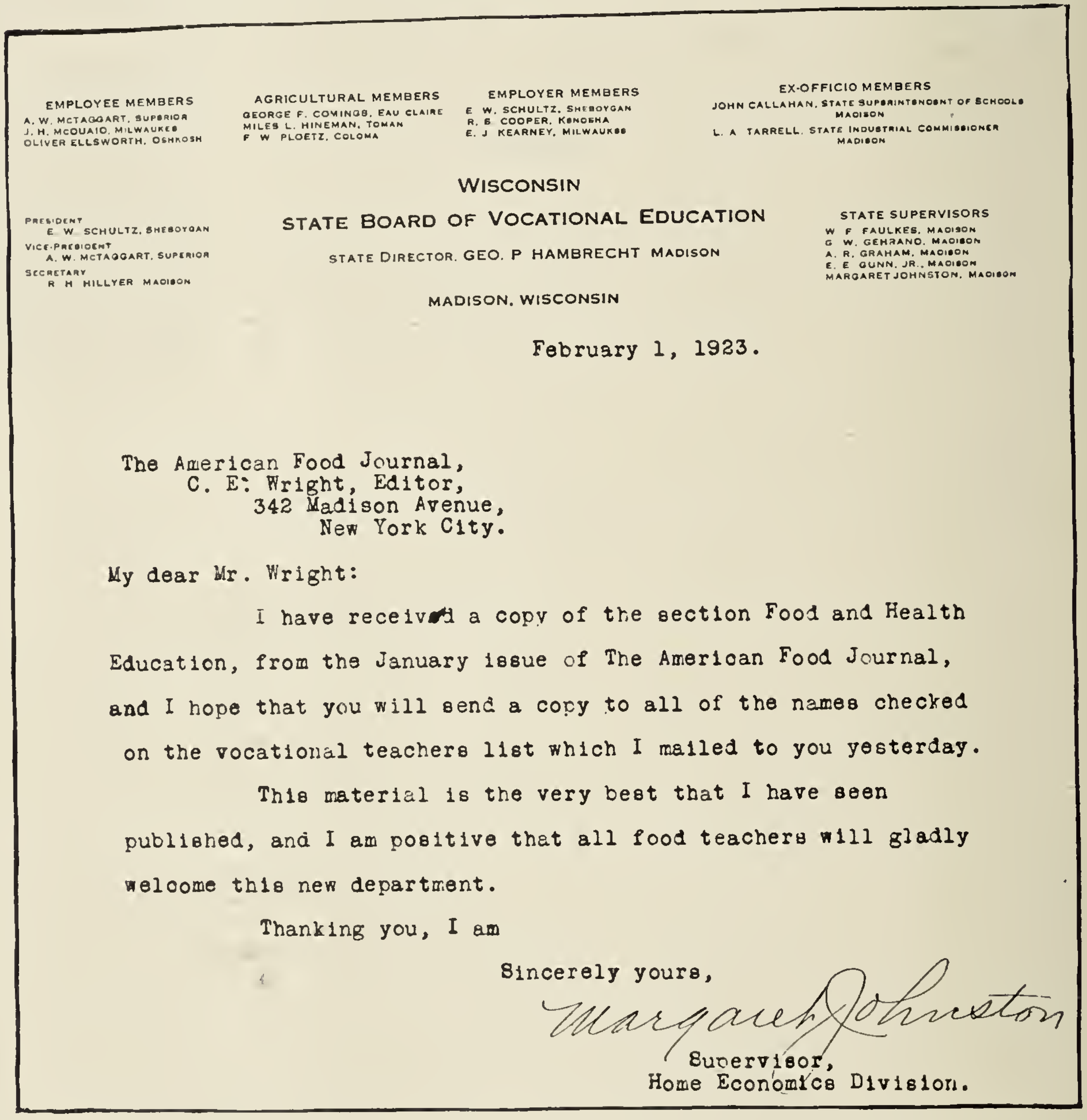
". . . I am enclosing a list of home economics teachers of South Carolina. These teachers will appreciate any literature that you send them or any helps that you can give relative to home economics. I wish to thank you for the literature sent me. . . . . ."

LILLIAN C. HOFFMAN,
South Carolina State Supervisor of Home Economics.

Illinois Schools Emphasizing Good Health Habits

"I am enclosing in this letter a list of the vocational home-making teachers here in Illinois. The list contains the names of the teachers of the schools under our jurisdiction but under separate cover I am sending you a copy of the Illinois School Directory for 1922-23, which contains the names of all of the teachers for the high schools and from this directory you can secure the names of the other home economics teachers in the state. . . . *I think that practically every grade teacher in Illinois is interested in health education because we are emphasizing the formation of good health habits in all of the schools of the state.*"

ADAH HESS,
Acting State Supervisor of Home Economics Education, Illinois.



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February 1, 1923.

The American Food Journal,
C. E. Wright, Editor,
342 Madison Avenue,
New York City.

My dear Mr. Wright:

I have received a copy of the section Food and Health Education, from the January issue of The American Food Journal, and I hope that you will send a copy to all of the names checked on the vocational teachers list which I mailed to you yesterday.

This material is the very best that I have seen published, and I am positive that all food teachers will gladly welcome this new department.

Thanking you, I am

Sincerely yours,
Margaret Johnston
Supervisor,
Home Economics Division.

South Dakota Supervisor is Very Much Interested

"I am very much interested in the Food and Health Education section of The American Food Journal, and am sending you a list of the home economics teachers of South Dakota. Many rural teachers would also be interested, so I am sending you a list of the county superintendents, having corrected the list to date. I do not know who the grade teachers are who may be interested, but the high school teachers can easily find out. I thank you for the opportunity to examine this valuable publication."

EDNA COURTNEY,
South Dakota State Supervisor of Home Economics Education.

New Mexico Teachers Will Welcome New Department

". . . I am enclosing a list of the home economics teachers in New Mexico. *I am sure these teachers will appreciate receiving copies of the section, Food and Health Education . . .*"

RUTH TAYLOR FOARD,
New Mexico State Supervisor of Home Economics.

Says Teachers Will Appreciate New Section

"I am enclosing a list of the home economics teachers of this state. I regret that I do not have any list of the teachers in the grade schools who are interested in food and health education. Most of the high school teachers handle

ood Journal on Our New Department, Education

this work for the whole school. *I feel sure that they will appreciate receiving the section on Food and Health Education* from the January issue of The American Food Journal."

DOROTHY G. ELLIS,
Idaho State Supervisor of Home Economics.

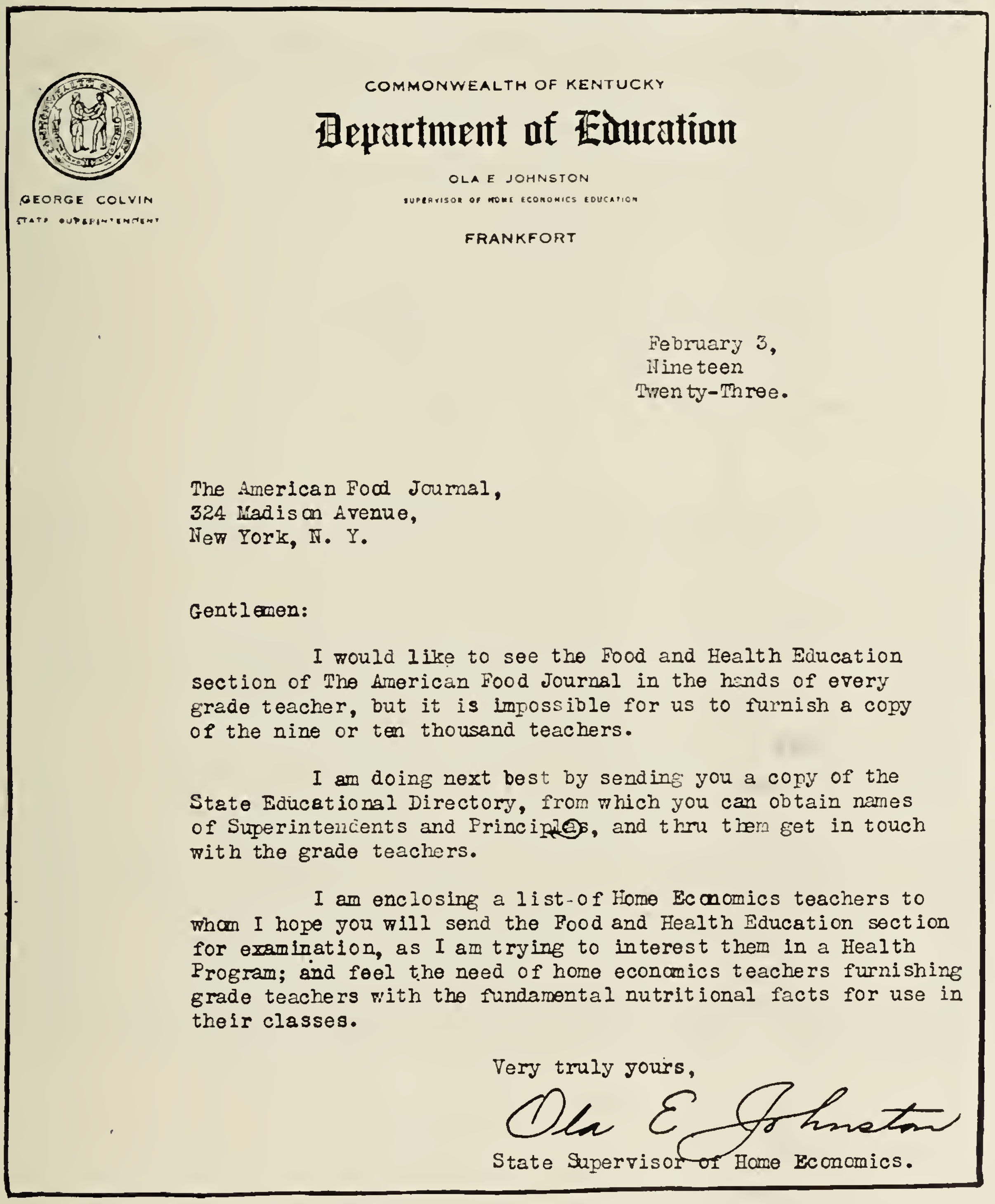
posters to illustrate food combinations, etc., but I am glad to have these new suggestions."

MARGARET L, HAYS,
Saratoga Springs, N. Y.

Louisiana Teachers Glad to Get Suggestions

"I enclose a list of the home economics teachers of this state, and I shall be very glad to have you send them a copy of the material referred to in your letter. Much of this work is now being undertaken in the schools of Louisiana, *and we are glad to get suggestions being used by other schools.*"

CLYDE MOBLEY,
Assistant in Home Economics, Department of Education, Louisiana.



COMMONWEALTH OF KENTUCKY
Department of Education
OLA E JOHNSTON
SUPERVISOR OF HOME ECONOMICS EDUCATION
FRANKFORT

GEORGE COLVIN
STATE SUPERINTENDENT

February 3,
Nineteen
Twenty-Three.

The American Food Journal,
324 Madison Avenue,
New York, N. Y.

Gentlemen:

I would like to see the Food and Health Education section of The American Food Journal in the hands of every grade teacher, but it is impossible for us to furnish a copy of the nine or ten thousand teachers.

I am doing next best by sending you a copy of the State Educational Directory, from which you can obtain names of Superintendents and Principles, and thru them get in touch with the grade teachers.

I am enclosing a list of Home Economics teachers to whom I hope you will send the Food and Health Education section for examination, as I am trying to interest them in a Health Program; and feel the need of home economics teachers furnishing grade teachers with the fundamental nutritional facts for use in their classes.

Very truly yours,

Ola E Johnston

State Supervisor of Home Economics.

Best Thing She Has Ever Seen for Teaching Nutrition

"I was very much interested in the copy of Food and Health Education which you sent me and think *it is the best thing I have ever seen for teaching nutrition.* My work is particularly with seventh and eighth grade girls and I feel this is just the sort of thing they need. During the past three of four years my girls have made

Material is the Best She Has Seen Published

"I have received a copy of the section, Food and Health Education, from the January issue of The American Food Journal, and I hope that you will send a copy to all of the names checked on the vocational teachers list which I mailed you yesterday. *This material is the very best I have seen published, and I am positive that all food teachers will gladly welcome this new department.*"

MARGARET JOHNSTON,
Supervisor Home Economics Division, Wisconsin State Board of Vocational Education.

Thinks Section Ought to Be in Hands of Every Teacher

"I would like to see the Food and Health Education section of The American Food Journal in the hands of every grade teacher. . . . . I am enclosing a list of home economics teachers to whom I hope you will send the Food and Health Education section for examination, as I am trying to interest them in a health program, and feel the need of home economics teachers furnishing grade teachers with the fundamental nutritional facts for use in their classes."

OLA E. JOHNSTON,
Kentucky State Supervisor of Home Economics.

Section Full of Snap

"The copy of the section from The American Food Journal for January has been received. *It is well gotten up and full of 'snap.'* I shall be very glad to furnish you with a list of names of the home economics teachers in the Smith-Hughes high schools. I feel this booklet has some very good suggestions that they can use in their health work. . . . Thanking you for this interesting section on Food and Health, and for your interest in the home economics education for our state, I am very truly yours."

H. CHRISTINE FINLAYSON,
North Dakota State Supervisor of Home Economics Education.

The Teacher's Foe

CHILDREN who are malnourished present a serious problem to the ambitious teacher. They rarely progress in school as they should. That one in three children of school age is undernourished has been graphically demonstrated by experiments in New York City schools.

How to overcome it

The Nutrition Department of the Borden Company, largest producer of milk products in the world, has observed over 500 malnourished school children during the past year and proved that Eagle Brand Condensed Milk is exceptionally valuable for the treatment of this dangerous condition.

Eagle Brand is pure, whole, cow's milk combined with sugar. Diluted to the special malnutrition formula, it supplies factors necessary for growth and health—proteins, vitamins, carbohydrates. Particularly it is rich in the energy units which are so important. Correct feeding and the careful observance of health rules will work wonders for the backward school child.

Send for "20 Suggestive Lessons"

Be the first in your school to start a health and nutrition class and earn the gratitude of your children, their parents and the whole community. The Nutrition Department will gladly show you how—absolutely free of charge.

This Department has worked out a careful set of lessons called, "20 Suggestive Lessons for Nutrition Class." These are based on the actual observation of hundreds of malnourished children and are the same lessons used by the Borden nutrition workers themselves.

With these lessons for a guide you will find it easy to begin this valuable work. Write us today. Address Nutrition Department, The Borden Company, Borden Bldg., New York, N. Y.

teaching of foods and cookery in such a way that they can use it as a means of keeping healthy.

As one of the beginnings which have been made, we have worked out a course of study in the Philadelphia Elementary Public Schools, with good health as a project.

This course was planned for a group of girls, twelve to sixteen years of age, from the Philadelphia Trade School for Girls. Most of them were planning to take factory positions, working from eight o'clock to six o'clock, as soon as they were graduated, and less than 25 per cent of them assisted or could assist in any way in the work of their homes because of their long working hours. Cookery as such was a secondary object with this group, though it was the means of interesting the class in the project. As the class consisted largely of girls who had had cooking in the seventh and eighth grades of the elementary schools, there was no need for detailed preparatory lessons in such matters as house work or manipulation.

The first four, however, were a partial review and consisted of cooking foods typical of the seven necessary food elements. These lessons emphasized the substances contained in food and also the uses of each in the body.

A view of the kitchen in Mitchell Junior High School, Philadelphia, showing food ready for serving

The following constitutes a suggestive list of foods:

1. Mineral matter, acids, and vitamines
   - Apple and celery salad
   - Cold slaw
   - Boiled salad dressing
2. Starch
   - Potato soup
   - Creamed vegetables
3. Protein
   - Tough meat
   - Beef stew
   - Dumpling
4. Fats and oils
   - Pastry, apple pie

Following these, a bread lesson was given for three reasons: the first was to impress the theory of the cooking of starch; the second to satisfy the sudden and rather superstitious interest in yeast which has arisen from magazine advertisements; and the third to instruct those who actually did want to help in the process of break-making at home.

The sixth lesson gathered the preceding ones into the making of a balanced meal, the necessity for the use of each food element and the selection of the foods from an economical standpoint.

Food Charts

In connection with the first lessons the girls brought in pictures from advertisements to illustrate foods containing the food elements they were studying. These they made into charts for each lesson. The subject of the posters were the solid food elements. For example, from the collection of the advertising pictures brought in, those which were most typical of the vitamine-bearing foods were selected and made into a chart representing this type of food. This was done with each of the food substances and when the uses of the different classes were studied charts were made which held examples of the chief foods depended upon to perform that function. At the end of this series of lessons balanced meal charts were prepared, each girl endeavoring to represent as fully as possible the substances which are necessary to form a complete meal.

These are only suggestions of the many ideas which may be shown more clearly and worked out advantageously by making posters. It can be done with a comparatively small expenditure of time, and with a few suggestions as to arrangement the girls do interesting work, choosing the subject and materials themselves. Often they invent names or phrases for their posters that catch the eye and show that they really grasp the idea of the food principles. The charts shown here were chosen because they can be used as illustrations in teaching the elementary food lessons in other classes.

In the lesson of menu-making each girl planned a breakfast for a family of five, and the two menus were selected which seemed best from the point of view of how well they filled the requirements of the family. These two menus were of a slightly different type, and the amounts were planned for and cooked in the next two weeks' lessons. Menus not used in class might be corrected and copied by the whole class and kept in a notebook for reference.

Alice A. Johnson, supervisor of foods work in the elementary and junior high schools of Philadelphia

This plan was followed in making menus for luncheon or suppers and finally dinners. The following were selected with regard to the limits of time for class work and the non-uniformity of the previous preparation of the girls.

Breakfast:

1. Fresh fruit, creamed eggs, rice, and toast.
2. Stewed dried fruit, cooked cereal, muffins and cocoa.

Lunch:

1. Creamed potatoes, tomato soup, tea biscuit.
2. Creamed cheese on toast, apple salad, tea.

Dinner:

1. Minced meat on toast, spinach with egg, corn starch pudding with chocolate sauce.
2. Hamburg steak, tomato sauce, scalloped potatoes and prune pudding.

This brought the girls to the end of the fourteenth lesson. Each girl was asked to report her weight the following week, and also the age and weight of any younger children in her family or neighborhood, who appeared to be eating insufficient amounts of some of the foods studied. This was not done with any intention of actual follow-up work in nutrition, but as a basis for the quantity or calory lessons of the following weeks.

The next lesson found the girls eager to discuss their weights, though these seemed absolutely unrelated to any fact they had ever heard of except that candy is fattening. They soon understood, however, the significance of weight in connection with height and age.

Although it sometimes seems impossible to awaken adolescent girls to the incalculable value of good health in their later years, they all can see the difference between their enjoyment of work or play when they are ill or well, and vitality can be measured roughly by how well and how far they like to walk.

In this lesson a simple chart of energy requirements for each age was put on the board, by which the girls could work out their own requirements by age or weight.

Energy Requirements Table Used Kinne and Cooley

Age in yrs.	Calories per lb. per day
Under 1	45
1-2	45-40
2-5	40-36
6-9	36-40
10-13	30-27
14-17	27-20
17-25	Not less than 18

Later in the course the following activity and energy chart was used:

Sleeping, .4 calories per lb. per hr.
Sitting, .6 calories per lb. per hr.
Light exercise, 1. calorie per lb. per hr.
Active exercise, 2. calories per lb. per hour.
Severe exercise, 3. calories per lb. per hour.

IN all recipes calling for baking powder, insure successful results by using Royal Baking Powder (absolutely pure.)

It is conceded by domestic science teachers and baking experts the world over to be "the most healthful and dependable baking powder made." Royal contains no alum — leaves no bitter taste.

A view of the kitchen at Mitchell Junior High School showing type of equipment used in all junior high schools of Philadelphia

From a list of one-hundred-calory portions each girl planned a day's rations for herself, using the results of her calculations.

In the next few weeks, after a little practice in working out values of recipes from their one hundred-calory list, the girls prepared some simple luncheons in one-hundred-calory amounts so that they could see the actual quantity of food. Simple menus, such as baked potatoes and cup custard, poached egg and cornstarch pudding, cream soup with croutons, and baked apple, were used. For such lessons as these the charts published by the Department of Agriculture at Washington might be of service. They were not planned primarily from the point of view of individual diet but to illustrate family amounts per week. They are, however, of great value in meal planning which is of comparatively small value from an economical standpoint if not done on a weekly basis. They are very useful in teaching food groupings, and when we place the carbohydrates together and indicate the four essentials in the fruit and vegetable group, they line up very well as illustrative material for this course.

The last two lessons of the course were on invalid cookery, in which the girls prepared such foods as albumen lemonade, gelatines, gruels, beef-tea. They were planned to emphasize the preventive value of healthful diet.

We have found that notwithstanding the old pedagogical rule, "Do not teach what not to do," the girls learned readily to build up from their usually inadequate diet a more healthful and nourishing one. There is an illustration which we often use which interests the girls and points our moral. It is one of the quaint practices of the old-fashioned homemaker. Many of us know old ladies who still have implicit faith in their "spring bitters." After the long winters when little or no fresh or green foods could be obtained, the wise housekeeper of those days went out into the fields the first warm days of spring and with her knowledge of herbs, lost or forgotten by us now, selected the little tender leaves of plantain, dandelion, yarrow, tansy, mullein, and dock, out of which she boiled the black and bitter juices, with which to dose her protesting family. Did they need it? Surely they did, for it was the much needed vitamines she was administering all unaware. But this was an unpleasant way of getting them into the system, and now we are fortunate enough to live in a stage of civilization when we can procure the health-protecting foods all the year around.

This illustration serves a vital point in our health campaign—that we should make use of our resources for a health-giving diet. In these days when the League for Longer Life is preaching preventive medicine we must also make it one of the objectives of our domestic science courses to teach with equal inspiration that the fullest enjoyment of health can be procured only by the proper selection of food to form a disease preventive diet.

1. Mineral matter, acid and vitamines
   Apple and celery salad
   Cold slaw
   Boiled salad dressing
2. Starch
   Potato soup
   Creamed vegetables
3. Protein
   Tough meat
   Beef stew
   Dumplings
4. Fats and oils
   Pastry
   Apple pie
5. Bread
6. Breakfast menu-making
7. Breakfast
   Stewed dried fruit
   Cooked cereal
   Muffins, cocoa
8. Breakfast
   Fresh fruit
   Creamed eggs, rice
   Toast
9. Lunch menu-making
10. Lunch or supper
    Creamed potatoes
    Tomato soup, tea biscuit
11. Lunch or supper
    Creamed cheese on toast
    Apple salad, tea
12. Dinner menu-making
13. Dinner
    Minced meat on toast
    Spinach with egg
14. Dinner
    Hamburg steak, tomato sauce
    Scalloped potatoes
    Prune pudding
15. Energy requirement lesson
16. Preparing foods in one hundred calory portions
    Baked potato
    Cup custard
17. Cream soup
    Baked apple
18. Poached egg
    Cornstarch pudding
19. Invalid cookery—gelatin—gruels
20. Beef tea
    Albumen water, milk toast

Foods class in the Hollingsworth Continuation School, Philadelphia

Domestic Science Teachers

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Dallas, Tex., Times Herald
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Los Angeles, Cal., Times
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Oil City, Pa., Blizzard
Paterson, N. J., Press Guardian
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Racine, Wis., Journal World
Rochester, N. Y., Democrat and Chronicle
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If your favorite newspaper does not publish this material, send to us for a sample. If you will call it to the attention of the editor of your paper he will probably be glad to co-operate with you in using it to spread in your community information on better nutrition.

THE AMERICAN FOOD JOURNAL
342 MADISON AVENUE
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The Eye Creates the Appetite

WHEN the appetite refuses the essential foods plainly cooked, it will eagerly take the same foods attractively prepared with KNOX SPARKLING GELATINE.

Vegetables, meat, fish and eggs — fresh or canned fruits are made almost irresistible when combined with KNOX SPARKLING GELATINE, which of itself, has a high dietetic value. For example, here is a recipe in which prunes are made so attractive that the very sight of them will stimulate the weakened appetite.

Prune Whip

½ envelope Knox Sparkling Gelatine
¼ cup cold water
½ cup sugar
1 cup prune pulp
1 doz. chopped nuts
2 tablespoons lemon juice
Whites of two eggs, beaten stiff

Soak gelatine in cold water five minutes. Put prune pulp, lemon juice and sugar in saucepan, and bring to the boiling point, stirring constantly. Add soaked gelatine, stir until cool. When mixture begins to thicken, fold in whites of eggs beaten until stiff, turn into wet mold or paper cases, sprinkle with chopped nuts.

KNOX
SPARKLING
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Free gelatine will gladly be given any Domestic Science Teacher for classroom work if she will write on school stationery, stating quantity and when needed.

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The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Food Work for Commercial High School Girls

Prepared under the direction of

HENRIETTA W. CALVIN

Director of Home Economics, Philadelphia, and

ALICE A. JOHNSON

Supervisor of Food Work in the Elementary and Junior High Schools
of Philadelphia

THE fact that the food work is given to the girls in their third year in high school gives the work certain very decided advantages. In the first place several years have elasped since any study of foods has been made and during that time the girls have acquired a broader background. Then too, the girls are older, more observant and more appreciative of home and community problems. Also they are beginning to see their goal, work in the work-a-day world close at hand, and are more vitally concerned and anxious to fit themselves for the future.

Our aims are very definite. We wish to make our girls realize the value of health and appreciate that the factors which influence it lie largely within their own control. We wish to provide activities in food preparation that illustrate the principles we teach, to form efficient habits of work and to develop confidence, and desire to attack similar problems at home. We wish also to awaken an interest and appreciation of the activities of the home and community and to encourage a sense of responsibility toward these activities.

The time allotment is one ninety-minute period a week for a year. The laboratory is the old-fashioned hollow square with tile-top desks and equipment for individual, group and family cookery. The cost averages about one and one-half cents a pupil for each lesson. Practically all of the commercial students take food study, which is offered as an elective and given one-half credit.

Our food curriclum for the commercial girl is based on her present needs leading up to an appreciation of the relation of her living habits to her efficiency as a business woman later. The common causes of ill-health among high school girls and the meaning and value of good health are discussed in the first lessons. A weight chart record is made and kept for the year, affording practical illustrations for the study of the influence of living habits on health. Simple experiments in food analysis and digestion are used to familiarize the girl with food values. Special stress is laid on the necessity for cellulose, mineral matter and vitamines in the diet.

Why eat? What to eat? These are questions every girl should be able to answer. The planning of healthful meals is accompanied with the preparation of simple combinations of foods.

The next problem is that of economy in food selection and meal planning. This is taught by tracing the methods of food production, distribution and marketing by means of charts and maps and the use of the girls' own knowledge which results from the buying of food for the family. Staples are bought, weighed and measured, and costs, not only of foods but of recipes, are estimated and compared in terms of family use. In connection with this the brands, grades and adulteration of food are discussed.

Then follow problems of food service with emphasis on attractiveness. A typical dinner is completely planned, cooked and served by each class.

The kitchen as a workshop that is sanitary, efficient and attractive is always another interesting unit. Particularly pointed are the remarks brought about in discussions of kitchens both at school and at home. Proposed changes to improve efficiency in home kitchens are drawn to scale and afford topics for class study. This involves the matter of kitchen equipment and labor-saving devices pertaining to successful food preparation.

Home management, as the second term's work is called, begins with the question of shelter under city conditions, the proportion of the income to be spent; the advantages and disadvantages of rental and ownership and the factors which determine the selection of the home.

The division and use of the income proves to be a revelation to the girls and gives a chance for teaching personal and family accounts. The expenditure of the income for the purchase of household equipment, operating, food and clothing expenses can only be treated in a very general manner, but in spite of that fact, it affords insight into woman's responsibility as a consumer.

A study of food from the nutritional and dietetic standpoint is introduced by a review of food preparation with emphasis on technique of cookery, food values and food costs. The types of recipes are more complicated than those of the first term and are planned to test the girls' ability in applying their knowledge and skill.

Problems in feeding start with those of the girl—especially her breakfast and lunch. The special requirements of small brothers and sisters of various ages, parents and grandparents, are discussed as are also invalid diets. These problems are illustrated in some cases by exhibits of school and cafeteria lunches, children's diets for the pre-school age and the preparation of trays for invalids.

Throughout the entire course effort is made to present the work in whatever way is best suited to the problem under consideration. The school lunch room which is under separate management is always at our service as a means and outlet for food preparation.

As is ever the case, the success of the food work for our girls depends upon the untiring efforts of their teachers. Especially fortunate are these girls in that their teachers are women who have not only high ideals and standards but who also had the advantages of college training and broad and varied experience in other lines of work.

Pupil Demonstration in Cookery

By BESSIE M. MANCILL

Holmes Junior High School, Philadelphia

IN the eighth-year cooking classes I find pupil demonstration lessons very successful. The girls then have the necessary background to make their lessons effective.

All the assignments for the demonstration are made in a previous lesson, thus giving the pupils sufficient time for preparation. Pupils are always sufficiently interested to practice at home before the lesson. The dish demonstrated is a variation of one the class has already prepared and the method of cooking is reviewed in class.

Before assignments are made the pupils discuss the characteristics of a good demonstrator and the duties of her assistant and these are then chosen.

During the demonstration the class sits near the demonstration table. The pupils are privileged to ask the demonstrator or her assistant any questions pertinent to the subject. If the demonstrator or assistant is unable to answer satisfactorily the question is referred to the class for discussion. Since at the beginning of a demonstration the pupils are sometimes hesitant about asking questions out of sympathy for the demonstrator, I appoint a class leader to start the ball rolling.

Then the product is completed and sampled by the class, a score card is worked out to rate it and a summary of the important points of the lesson is discussed. At the end of the lesson the demonstrator and her assistant make criticisms and this is followed by class criticisms.

This type of lesson gives splendid opportunity for the development of individual initiative and responsibility. It produces a socal atmosphere of keen interest and enthusiasm so that discipline is unnecessary.

Teaching Health Through Home Economics

By NAOMI QUINTER HOLSOPPLE
Tilden Junior, High School, Philadelphia

SINCE home economics was first introduced to the world of education it has had for its aim teaching pupils how best to adapt themselves to their living conditions to the end of achieving happy and useful lives. More and more this aim has resolved itself into the teaching of health.

No department has a better opportunity for this work than that of home economics.

The course on foods should be upon the individual and group needs of the class. If the children are weighed and measured with regularity the problem of foods and nutrition may be brought to their immediate attention. The maintenance of perfectly balanced nutrition in itself constitutes a project in which the problems of the overweight or underweight members of the class may be started on their way to solution. One of the most gratifying results of this project is the awakened interest in the health habits of younger members of the families of the girls.

What, then, shall be the basis for even the earliest meal projects in beginning cookery? Certainly not merely speed and efficiency in setting edible food upon a table. Far more, for it should be the selection and preparation of palatable and nourishing foods which can supply the girl and her family with the required elements of the perfect diet.

This has been done both in the elementary and junior high schools, adapting the food study and meal planning courses to the daily needs of the girl.

As no two groups are alike in their interests and needs, the type of meal, the amount of report assignments to each girl, and the secondary problems in the project have been varied. In each case the chief purpose remains the same—the teaching of foods in relation to health.

Recently an added opportunity was given to the home economics department in the extra-classroom activities provided for in the curriculum of the junior high school. This is in the form of a club which may be elected by the pupils. Since last September we have conducted such a club with health as the project. The name given to the club is The Health and Beauty Club, obviously, though not inappropriately, to advertise it to its prospective members. The sole purpose is to give the girls a running start in the formation of real health habits.

The proof of the advantage a home economics worker has in this line lies in the fact that no point of health can be more surely reached than through the high standards of an ideal American home life.

Not only the hygiene of foods, but of clothing as well, becomes a part of the project. The necessity to prove to girls that beauty in dress does not exclude common sense, good taste, and precaution against disease has never been greater than now.

In this club every aspect of sanitation is treated, including cleanliness of the home and its furnishings, the home in its relation to the community, and the personal habits of the girls and their adaptation to the home so that they can do their part in keeping it a healthy, happy place in which to live.

This teaching should not stop with the girls. Boys as well need these fundamental health rules, and these may be given them through cooking clubs for boys. Selection of food is of as great importance to them as to their sisters.

These projects, strictly speaking, are not new to our work. They are in most cases only old ideals reorganized to emphasize the means of acquiring and keeping real health, which in its turn has become a question of first importance in the more and more complex problems of our modern life.

Can You Make Cottage Cheese from KLIM
Spell it backwards
FRESH MILK—POWDERED

Any housewife who has ever used evaporated or condensed milk thinks the above question foolish. But you can make delicious cottage cheese or Bonnie-Clabber from soured KLIM.

KLIM is the solids of pure, pasteurized cow's milk in powdered form.

KLIM contains all the elements of pure, fresh cow's milk—all the salts, enzymes and vitamins are present.

Add water to KLIM *and you have* MILK.

KLIM must be kept iced like fresh cow's milk, after it is reliquified, otherwise, it curds or "sours" like fresh bottled milk and from this curd you can make

KLIM COTTAGE CHEESE

or use the soured milk for Bonnie-Clabber or ginger-bread and biscuit baking.

Write for your copy of "Nationally Known Recipes"

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Suggestions to Teachers Regarding Sources of Material

Editors Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

"Texas Vocational Progress." An eight-page publication issued by the Texas State Board for Vocational Education. Carries a Home Economics Section under the direction of Miss Jessie W. Harris and Miss Lillian Peek. Suggestions for plays, classroom projects, school lunch work and lists of available literature.

"Home Economics In Rural Schools." (Home Economics Circular No. 13.) Municipal problems connected with establishing the teaching of home economics, the local food supply, equipment and courses of study are discussed fully.

"Current Problems In Home Economics Instruction and Supervision." By Henrietta W. Calvin (Home Economics Circular No. 14, Department of the Interior, Bureau of Education, Washington, D. C.) Report of a series of conferences of supervisors and teachers or home economics, called by the United States Commissioner of Education and held in eleven cities. City and rural problems of both secondary and junior high schools are discussed.

"Self Supporting Home Economics Departments." By Henrietta W. Calvin (Home Economics Circular No. 15, Department of the Interior, Bureau of Education, Washington, D. C. Helpful suggestions for reconciling the teaching of cooking and the preparation of hot lunches to be served in a small school cafeteria. Five cents a copy.

"How Are You Growing?" A poster issued by The Ontario Division of the Canadian Red Cross Society, in cooperation with the School Health Division of the Department of Education, 410 Sherbourne Street, Toronto, Canada. Gives an unusally effective method of presenting weight tables for boys and girls

"To Prevent Constipation." By Florence Powdermaker, Specialist in Nutrition, New Jersey State Agricultural College, Division of Extension, New Brunswick, N. J. A leaflet giving many helpful ideas as to the best methods of teaching the importance of intestinal hygiene. Anti-constipation foods are listed and recipes given for preparing several of the dishes.

Publications of the New York Association for Improving the Condition of the Poor.

Set of charts, prepaid including Food Primer, $2.00.

Food Primer (containing the 5 charts with educational material) per copy, $.25, per dozen, $2.50.

Adequacy and Economy of Some City Dietaries. A study of the Relation of Food value to Cost in the Average City Dietary (for the student of nutrition). Per copy, $.25, per dozen, $2.50.

Lessons in the Proper Feeding of the Family. Inexpensive Recipes and Suggestions in Marketing (for the mother in the home). Per copy $.25, per dozen $2.50.

Food Allowances for Healthy Children. A Compilation of Evidence of Caloric needs for Children (for the student of nutrition). Per copy $.10, per dozen $1.00.

Food for the Family. The Diet for the Family with Emphasis on Health and Economy (for the use of social workers and mothers). Per copy $.25.

These charts, based upon the results of three years' research and experiment, reduce the food problem to simple graphic terms so that it can be easily understood by everyone capable of reading, and may be applied in the interest of the best health of the family.

With each set of 5 charts will be included a thirty-two-page book, **"The Adequacy and Economy of Some City Dietaries,"** by H. C. Sherman of Columbia University and L. H. Gillett of the New York Association for Improving the Condition of the Poor. This book contains the complete results of the analysis of ninety-two carefully collected family dietaries. Each dietary is an exact record of the amount and cost of the food eaten by a family for a period of seven days during 1914—15.

THOUSANDS USE IT!

Constipation is the national ill. No longer do we get the rough, bulky foods which formed such an essential part of our ancestor's diet. These acted as a preventive of this enemy to health. Constipation was as rare then as it is prevalent now.

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This natural food gets to the source of the trouble—inactive intestinal muscles. It gives them the natural exercise they require—gently rids the body of the poisonous waste that is constantly accumulating in the intestines. Lack of this exercise causes constipation.

For lasting results, try two or three cakes a day—plain, or mixed with milk or fruit juices.

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FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

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Experiments with Bacillus (Clostridium) Botulinus Under Household Conditions

By RUTH B. EDMONDSON, CHARLES THOM, and L. T. GILTNER

RECENT studies of the organism of botulism have greatly extended our knowledge of the possibilities of poisoning from this source. Meyer and his colleagues have shown that bacillus botulinus is so generally distributed that viable spores at least, if not vegetative forms of this organism, may be anticipated in any lot of uncooked food. Ordinary temperatures used in the preparation of food for the table do not destroy all of the spores of this organism. Food then, as it comes to the table, may be expected occasionally at least to carry viable spores of bacillus botulinus. There does not appear to be ground for believing that foodstuffs if freshly cooked are dangerous, because the same work has shown that cooking destroys the toxin present in the food, leaving only the heat resistant spores. The possibilities of poisoning from food cooked and handled in the household, therefore, are limited to the chance of toxin development during handling and storage of the cooked product before consumption.

Although the length of time and the temperature at which cooked food is held or stored depends on the equipment and habits of the individual household, holding in an ice box, cellar or pantry for two or three days is a very common practice. How quickly surplus food or "left-overs," if infected with B. botulinus and kept under such conditions, may become poisonous and whether toxin can be present without physical evidences of spoilage, such as some combination of mold, scum, sliminess, odor or gas production, are important questions.

In studying these problems a series of experiments were performed under as nearly household conditions as possible, considering the dangerous character of B. botulinus. In these experiments culture media and foods were inoculated with known quantities of toxin-free spores of B. botulinus and incubated at different temperatures for different lengths of time. Uninoculated or control culture media and foods were also incubated under the same conditions as the inoculated samples. Samples were withdrawn at intervals for toxicity tests upon guinea pigs. A strain of B. botulinus, type A, which produces a very potent toxin and which was isolated from canned asparagus[1] responsible for the deaths of four persons in Boise, Idaho, was used for all inoculations.

Experiments under Household Conditions

In the first series of experiments B. botulinus was inoculated into anaerobic tubes of dextrose beef infusion containing chopped beef, and incubated at 20, 30, 37, 40 and 50 degrees C. At 20 degrees C., depending upon whether the inoculum used was large or small, it required from 4 to 5 days for the organism to produce enough toxin to cause typical symptoms of botulism, followed by death in guinea pigs. From 2 to 3 days at 30 degrees C. and one day at 37 degrees C. and 40 degrees C. were required to bring about the same toxicity. Foul or bad odor and gas bubbles accompanied toxin production at each temperature. There was no growth of the organism at 50 degrees C., even after a long incubation. The spores remained viable, however, and germinated readily when transferred to fresh media and incubated at a suitable temperature. The control tubes of media remained sterile.

This experiment shows that under favorable, anaerobic conditions, B. botulinus produced toxin in dextrose beef infusion more readily at temperatures of blood heat (37 degrees C.) than at approximately room temperature (30 degrees C.). A temperature of 50 degrees C. prevented the organism from growing.

Bacillus botulinus was next grown in pure culture and in symbiotic relationship with a common yeast on shallow layers of sterile canned peas in cotton stoppered flasks. The flasks were incubated at 20, 30 and 37 degrees C., respectively. An estimate of the number of bacteria and yeasts in the inoculum in each case was determined by direct microscopic count.[2] There were 29,000,000 toxin-free B. botulinus spores in the inoculum used in each sample of the peas when no other organism was added. In the series where B. botulinus was grown in symbiotic relationship with yeast there were 21,000,000 yeast cells and 20,000,000 B. botulinus spores in the inoculum in the first series and 3,000,000 yeast cells and 37,500,000 B. botulinus spores in the second.

In the pure culture series under conditions which were practically aerobic no toxin was produced at a temperature of 20 degrees C. during the 8 days of observation. At 30 degrees C. and 37 degrees C. toxin was produced in one day. There was no abnormal odor or other sign of decomposition at the end of the first day of incubation in the flasks of peas incubated at 20 or 30 degrees C. There were, however, a distinctly foul odor and gas bubbles in the peas incubated at 37 degrees C. With the heavy inoculation no warning signs of spoilage were noticeable in the peas incubated at 30 degrees C. for one day, although enough toxin was present to kill a guinea pig. There is, therefore, a possibility of poisoning from peas kept at temperatures (about 30 degrees C.) fairly common in the household for 24 hours.

In the peas inoculated both with B. botulinus and with yeast, toxin was developed more quickly in the first series at a temperature of 30 degrees C. than at 37 degrees C. Since 30 degrees C. is more nearly an optimum temperature for yeast growth than 37 degrees C., the yeast may be expected to render the medium anarobic more quickly at 30 degrees C., thus hastening the development of B. botulinus. A weak concentration of toxin (guinea pig lived six days after feeding) was produced by B. botulinus in the sample incubated for two days at 30 degrees C., but the same sample incubated for three days proved toxic to a guinea pig in about 18 hours. The sample incubated at 37 degrees C. did not prove toxic until the third day. After four days at 20 degrees C. the material was not toxic. Feeding of these samples was then discontinued. There was no foul odor due to the growth of B. botulinus in the peas incubated for one day at 20, 30 or 37 degrees C., respectively, although spoilage was evidenced by the film of yeast on the surface of the samples incubated at from 30 to 37 degrees C. The growth of yeast was heaviest in the sample incubated at 30 degrees C. and least at 20 degrees C. Foul odor and gas were present, however, on the second day in those incubated at 30 and 37 degrees C. Microscopic examination of the peas after four days' incubation showed the presence of yeast cells in each sample but no B. botulinus cells in the 20 degrees C. sample, a few in the 37 deg. C. sample and many in the 30 degrees C. sample. This correlated with the order in which these samples became dangerous.

Second Series of Experiments

In the second series with the greater inoculum of B. botulinus grown with yeasts, no toxin was produced at 20 degrees C. during the period of observation, which was extended to 16 days. At 30 degrees C. it took five days to produce a weak toxin (animal lived one week after the feeding). The same sample incub[illegible] days killed within 24 hours. At 37 degrees C. toxin was produced on the fourth day. In this case the large number of B. botulinus spores in the inoculum outgrew the yeast and so produced toxin more quickly at 37 degrees C. than at 30 degrees C. when protected by more profuse yeast growth. Signs of spoilage in these samples were not evident until toxicity was established. The control flasks of peas remained sterile. These results show that where peas are contaminated with yeast or other aerobic organisms, B. botulinus, if also present, may be expected to grow and produce its toxin at 30 degrees C. in two days. At 20 degrees C., B. botulinus had not produced toxin in 16 days.

In another series of experiments whole milk was used as a medium for the growth of B. botulinus. Fresh raw milk, with a count of less than 500,000 organisms per cubic centimeter, was divided into two lots. One lot was pasteurized at 63 degrees C. for 30 minutes in sterile pint milk bottles with cotton stoppers, and the other was sterilized in similar containers in the autoclave at 15 pounds pressure for 15 minutes. Pint bottles of low-grade pasteurized milk from a city dairy were also used in the experiments. Under the microscope smears of this milk showed so many organisms that a count was impossible. For convenience in discussion these samples of milk will be designated as "sterilized," "laboratory pasteurized" and "commercial." Each bottle was inoculated with 1 cc. of sterile physiological salt solution containing toxin-free spores of B. botulinus and a series of bottles were incubated at 9, 20, 30 and 37 degrees C., respectively. In the case of the samples incubated at 20, 30 and 37 degrees C. the inoculum contained 50,000,000 spores. The bottles incubated at 9 degrees C. received 60,000,000 spores. The milk was observed daily for signs of spoilage and guinea pigs were fed at regular intervals as in the above experiments to test for toxin production.

Significant samples of the detailed results, as shown in the table, are distinctly encouraging to the user of milk. B. botulinus failed to produce toxin at any temperature in the low-grade commercial product. No analysis of this result has been possible but it harmonizes with a cottage cheese experiment to be described later. Sterilized and laboratory pasteurized samples became dangerous after one or two days at blood heat and at 30 deg. C., but in each case such toxicity was coupled with well-known physical signs of spoiled milk. At 20 deg. C. no toxic results were obtained within 5 days during which samples were fed to guinea pigs every day. At 9 deg. C. no toxic results were obtained in 32 days. In these experiments, milk so cared for as to remain free from curdling, gas and bad odor was not toxic. At temperatures from 9 deg. to 20 deg. C. (48 deg. to 68 deg. F.) which are readily maintained in the household there is an ample margin of safety to justify the use of milk which gives no physical sign of spoilage.

Experiments with Fresh Milk

In another experiment, fresh, raw, whole milk was heavily inoculated with the sour milk organism, Streptococcus lactis,[3,4] and a few B. botulinus spores which had been previously freed from their toxin. The milk was then incubated at 20 deg. C. until curdled (2 days). After curdling, it was made into cottage cheese (the milk was warmed slightly on the stove and drained in cheesecloth), packed loosely in a sterile milk botle, and incubated at 16 deg. C. The cottage cheese showed no signs of spoilage until the fourth day. Up to that time the odor was clearly acid and microscopic examination revealed chiefly the presence of Streptococcus lactis-like bacteria. On the fourth day the surface of the cheese was covered with a heavy growth of Oidium lactis, mold and yeast, but even in this condition a guinea pig fed with a sample of the cheese and its surface growth showed no ill effects. A guinea pig fed with the coagulated soured milk before it was made into cottage cheese likewise had suffered no ill effects. The control cottage cheese remained in good condition until the fourth day also and was not toxic when fed to guinea pigs.

Since B. botulinus did not develop in the milk soured for cottage cheese the surface of a small package of sound commercial cream cheese was liberally smeared with spores of Oidium lactis and toxin-freed spores of B. botulinus, the cheese was rewrapped in its tinfoil and incubated at room temperature (average about 23 degrees C.). After 6 days a sample of the heavy, slimy surface growth was scraped off and fed to a guinea pig. The animal died of botulism on the second day after it had been fed. The control cheese showed objectionable slimy growth at this temperature upon the fourth day.

Meat Balls Used in Other Experiments

In another experiment meat balls made from chopped beef were inoculated with B. botulinus and incubated at 9 deg., 20 deg. and 30 deg., respectively. These balls were approximately one inch in thickness and one and one-half inches in diameter. An inoculum of 6,250,000 detoxified B. botulinus spores in physiological salt solution (0.5 cc.) was injected into the center of each ball and the balls were then cooked on a hot plate until the meat was thoroughly done throughout.

A meat ball incubated for 3 days at 30 deg. C. developed enough toxin to kill a guinea pig in about 18 hours. This sample was distinctly foul in odor and slimy in appearance. At a temperature of 20 deg. C. no toxin was developed in the meat balls during the first day of incubation but a sample incubated for 3 days produced symptoms of botulism in a guinea pig on the fourth day after the feeding, and death ensued on the fifth day. This sample was also foul in odor and slightly slimy. Another sample incubated for 4 days at this temperature killed in about 18 hours. At a temperature of 9 deg. C. no toxin had developed aft 3 weeks, although spoilage by other organisms had made the meat balls absolutely offensive on the tenth day. The control meat balls incubated at 30 deg. C. showed signs of spoilage on the third day, those at 20 deg. C. on the fourth day, and those at 9 deg. C. not until the tenth day. These samples never proved toxic.

Mashed potatoes were also inoculated

after cooking and mashing in the usual way. Deep glass dishes about 3½ inches in diameter and 2½ inches deep were filled with the potato and inoculated with 2 cc. of a spore suspension (25,000,000 spores). The mashed potatoes incubated at 30 deg. C. for one day produced slight symptoms of botulism in a guinea pig after one week, but the animal eventually recovered. The sample incubated at the same temperature for two days, however, killed a guinea pig in about 18 hours. No potato samples were incubated at 20 deg. C. After incubation at 9 deg. C. for 3 weeks no toxin had been developed, although spoilage by other organisms had made the potato samples offensive. General spoilage in the potato samples was evident on the first day in those incubated at 30 deg. C. and on the seventh day in those incubated at 9 deg. C. The control potato samples incubated at 30 deg. C. showed signs of spoilage on the first day. Those incubated at 9 deg. C. did not spoil until the seventh day.

Inoculation of Bread Loaves

To test the possibilities that B. botulinus might be recovered from bread, sample loaves were inoculated, in cooperation with Miss Rains of the Food Control Laboratory in this bureau. Enough dough for a single loaf was inoculated heavily with toxin-free spores just after mixing and allowed to go through the usual procedure of the Baking Laboratory, that is the fermentation period covered 4½ hours, 3 hours at 28 deg. C. and 1½ hour at 38 deg. C., and the loaf was then baked in an oven held at 220 deg. C. for 35 minutes. The dough for another loaf was inoculated with detoxified B. botulinus spores just after it had been worked and put into the pan for the second "rising." It was afterwards baked at the same temperature as the first loaf. The loaves were kept in a closed glass moist chamber for several days after baking. Then cultures from the crust, the interior of the loaf of bread just below the crust, midway between the crust and center and from the center were made from each loaf. B. botulinus was not recovered. This one experiment is not a sufficient basis for any conclusions, but the results suggest that poisoning from bread handled properly after baking would not be probable.

In these experiments good clean food (the control food used) held at temperatures of 9 deg. and 20 deg. C. remained fit for food for a longer period than left-over products are usually kept; food more heavily infected with spores of B. botulinus than is probable in natural contamination did not become toxic even at such temperatures as 20 deg. C. for 24 hours or longer. Clean sound food, or food washed thoroughly and rendered free from rotten or decayed areas or injured and moldy areas, free from mass bacterial contamination incident to heating, souring, and fermenting or "steaming," may be expected to carry into the household preparation of the product only an occasional spore or minimal cluster of spores of B. botulinus in contrast to the mass contaminations used in these experiments.

Toxicity and Spoilage in Milk Inoculated with B. botulinus

Variety of milk	Temp. oC.	Incubation Time Days	Toxicity to guinea pigs	Signs of spoilage
Sterilized	37	1	dead in 10 days	peptonization begun
	37	2	dead 1 day	
	30	2	....	gas peptonization and foul odor
	30	3	dead 1 day	
	20	4	....	no change
	20	5	survived	....
	20	16	dead	....
	9	32	survived	....
	9	7	....	none
Controls	No change at any period			
Milk—Lab. past'z'd	30	2	dead 2 days	gas, peptonization and foul odor
	30	3	dead 1 day	....
	20	4	....	curdled, "off" in odor
	20	5	survived	....
	20	16	toxic	....
	9	32	survived	....
	9	7	....	no change
	9	8	....	no change
Control	37	1	....	curdled
	30	2	....	curdled
	20	5	....	curdled
Commercial milk	37	1	survived	stormy fermentation
	37	5	survived	....
	37	16	survived	badly decomposed
	20	3	....	curdled
	20	5	survived	....
	20	16	survived	badly decomposed
	9	32	survived	....
	9	8	....	curdled, yeasty, moldy
Control	20	3	....	curdled

Although the number of experiments reported here is not great enough, considered alone, to offer safe average procedures for individual products, the results are directly in harmony with other cultural studies of B. botulinus made in this laboratory and elsewhere. The rate of toxin production by organisms of this group falls rapidly with lowered temperatures from a maximum not far from blood heat in the strains we have studied toward a negligible rate in a well handled refrigerator. From a household standpoint, these results clearly teach that products promptly and properly chilled may be kept without danger in an efficient household ice box for such a time, perhaps from one to two days, as is demanded by reasonable economy in the purchase and preparation of products for the table. Such handling, supported by competent observation of the condition of the food, appears to carry a fair margin of safety.

Summary

In general, the experiments indicate that food held in a reasonably efficient ice box for from one to two days is practically free from development of B. botulinus, even if present, and is entirely safe for ordinary recooking. Further, food held to the third or even fourth day, if not showing physical signs of spoilage, such as mold, scum, souring, or odor, involves little actual danger, but in every case calls for thorough recooking. The results equally clearly show the need of some type of effective refrigerator or cooling device in all households.

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[1] Charles Thom. Ruth B. Edmondson. and L. T. Giltner. Botulism from Canned Asparagus. Journal of the American Medical Association, Sept. 20, 1919. Vol. 73. pp. 907-912.

[2] Robert Breed and James B. Brew. Counting Bacteria by Means of the Microscope. Technical Bulletin No. 49. New York Agricultural Experiment Station. Geneva, N. Y.

[3] Syn. Streptococcus lacticus.

Tonca Bean Harvest Seems Good

Favorable and prolific flowering of the tonca bean trees of many sections of Venezuela indicates a prospective crop of between 200,000 and 250,000 pounds, says a dispatch to the Department of Commerce from Henry D. Baker, Consul at Trinidad. The entire crop will be cured at Trinidad and exported from there, owing to the possibility of rum in bond being used for the curing process which makes the expense much less. In the forest regions, which are almost entirely in mountainous districts, the tonca bean yields will be very low.

The Protection of Vitamine C in Foods

By EDWARD F. KOHMAN
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THE destruction of vitamine C in cooking processes is commonly ascribed to a combination of oxidation and heat and seems also to be affected by the degree of acidity. The data herein presented are in agreement with the view that oxidation plays an important role. They seem to justify the statement that as yet no one has given any conclusive evidence that heat in itself, within ranges of temperature used in cooking and canning, exerts more than negligible destructive action in acid products such as fruits, for the simple reason that no one has as yet excluded the effect of oxidation or other destructive agents when testing the effect of heat. This statement should not be construed as a contention that heat in itself plays no part in this respect. It is merely intended to point out that present data do not enable us to definitely evaluate the various destructive agents.

LaMer's[2] experiment, in which he bubbled hydrogen through tomato juice, would have thrown light upon this question if he had shown that the dissolved oxygen was completely washed out before the heating began, and if the hydrogen itself had not had a destructive action.

Hess[3] apparently attaches considerable significance to the oxidation of vitamine C in the pasteurization of milk in contact with air as well as in subsequent storage. If his view is correct, then it certainly is very important to pay attention to the oxygen which is dissolved in the milk just previous to pasteurization; but to our knowledge no one has made any reference to this.

Extent of Dissolved Oxygen in Milk and Water

To show the extent of this dissolved oxygen, the gas was determined and analyzed as it occurred in milk taken from the vat in a large milk plant in Washington just previous to and after a period of heating corresponding to pasteurization. The results are given in Table I.

Table I[1]—Gas Obtained from Fresh Milk by a 26-in. Vacuum for 5 Min. While Container was Jarred

Total Gas Cc.	CO_2 Cc.	Oxygen Cc.	Nitrogen Cc.	CO_2 Per cent	Oxygen Per cent	Nitrogen Per cent	Treatment before Determining gas by vacuum
18.2	2.5	3.2	12.5	13.7	17.6	68.7	Unheated milk taken from vat in dairy just previous to pasteurization.
12.9	0.8	2.0	10.2	6.2	15.5	78.3	Same milk after heating 10 min. at 70 deg. to 165 deg. F. and then 30 min. at 165 deg. F.

This determination was made by subjecting the milk to a vacuum in an inverted, round-bottom, long-necked flask, with a total capacity of 1220 cc., carrying a rubber stopper with two tubes, the one an outlet tube to which the vacuum was applied and the other an inlet tube through whicch air-free water was admitted to fill the vacuum and drive the gas obtained into an Orsat apparatus. Each tube carried a glass stopcock. A vacuum applied to a liquid in this manner without agitation will not remove appreciable amounts of gas for a long time. A state of supersaturation results and gas bubbles collect only slowly on the inner surface of the container, depending upon the degree of cleanliness of that surface. But if the container is jarred by blows from the hand, small bubbles form throughout the liquid, which is practically exhausted in 3 to 5 min.

The experiment recorded in Table II with water illustrates this characteristic of a liquid.

Table II—Gas Obtained from Distilled Water by a 28-In. Vacuum for 3 Min.

Total Gas Cc.	CO_2 Cc.	Oxygen Cc.	Nitrogen Cc.	CO_2 Per cent	Oxygen Per cent	Nitrogen Per cent	Treatment to Obtain Gas
0.7	0.0	0.2	0.6	0.0	25.0	75.0	Fraction 1, container quiet
16.0	0.2	5.0	10.8	1.2	31.4	67.4	Fraction 2, container jarred

The gas in Fraction 1 was obtained by subjecting distilled water to a vacuum of 28 in. for 3 min., during which time the container was kept quiet. The gas in Fraction 2 was subsequently obtained from the same sample of water by subjecting it to a 28-in. vacuum for an additional 3 min., during which time the container was jarred. Neither fraction accurately represents the gas obtained from the entire contents of the flask (1220 cc.), because water was gradually drawn out of the flask as the air collected in the upper portion. This amounted to considerable for Fraction 2, as 16 cc. of gas measured under standard conditions would occupy considerable volume when at room temperature and under the vacuum used.

Marked Destruction in First Part of Heating Period

Delf[4] did the earliest extensive work on the rate at which vitamine C is destroyed by cooking. She summarizes her work with cabbage as follows:

Table III—The Loss of Vitamine C in Cooking Cabbage

Time of Cooking Hrs.	Temperature deg. C.	Vitamine C Destroyed Per cent
1	60	70
1	70	90
1	80	90
1-3	90	70
1	90	More than 90
1-3	100	70
1	100	Less than 90
2	100	Less than 90
1	110	Less than 90
1	120	Less than 90
2	120	Les sthan 93
1	130	93
2	130	93 to 97

The striking feature of this table is that there is scarcely any noticeable difference between the effect of cooking 1 hour at 70 deg. C. and higher temperatures up to 2 hours at 120 deg. C.

Attention is called here to the fact that the cooking of cabbage requires considerable water, which always has more or less dissolved oxygen, while tomatoes are canned without the addition of any water. Comparing the published figures as to the vitamine C content of raw tomatoes and of canned tomatoes, and judging from the statement of LaMer[5] that the canned tomatoes used by him were equal or slightly superior to the raw product raised in his garden, it does not seem probable that there is any appreciable loss of vitamine C in the canning of tomatoes. This protection in tomatoes is commonly ascribed to their acidity. But if we consider that water always has dissolved oxygen and raise the question as to the possible effect of this in cooking cabbage, and at the same time bear in mind that the acidity of tomatoes did not protect them when oxygen was bubbled through during the heating period as was shown by LaMer,[6] we cannot but infer that there may be another factor which is as important as the acidity or heat—namely, oxidation, and more especially that caused by oxygen in solution in cooking water or in the product. This inference is strengthened by the fact that Delf's results do not indicate any marked difference in destruction when the time and temperature are increased from 1 hour at 70 deg. C. to 2 hours at 120 deg. C.

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[1] The volumes of gas in all tables in this paper are for standard conditions.

LaMer determined the rate of vitamine C destruction when the juice from canned tomatoes was heated at 60 deg., 80 deg., and 100 deg. C. The tomatoes were first strained through muslin and then filtered through paper. The heating was done in Erlenmeyer flasks closed with cotton plugs and placed in a water bath.

In interpreting LaMer's results with a view to determine how far the destruction he noted was due to heat and how far to oxidation, it should be borne in mind that his tomato juice was exposed sufficiently before the heating began to dissolve more or less atmospheric oxygen, and that liquids heated below the boiling point may retain dissolved gases in a supersaturated state for a long time. When fruit juices, such as tomato juice, containing dissolved oxygen, are heated, the oxygen interacts with them. This does not justify the conclusion, however, that this oxygen is no longer in a form in which it may exert a destructive action. We must consider the possibility of its having raised the oxidation potential, which LaMer suggests as a possible measure of the destructive action of a medium.

Moreover, diffusion of atmospheric oxygen can readily take place through a cotton plug, and the vapor pressure of the tomato juice in LaMer's experiments only in part displaced atmospheric pressure. The vapor pressure of tomato juice is less than that of water. At 60 deg. C. the vapor pressure of water is approximately only one-fifth of the atmospheric pressure, while at 80 deg. C. it is considerably less than one-half of the atmospheric pressure. It is true that the density of atmospheric oxygen would be decreased by elevated temperature but not enough to make it negligible. At 60 deg C oxygen would be 10.5 per cent, and at 80 deg. C. 15.5 per cent less dense than at 25 deg. C., or room temperature. Even at 100 deg. C., the vapor pressure of tomato juice would be appreciably less than atmospheric pressure.

If it is recalled that LaMer found the destruction of vitamine C complete in 1 hour at 100 deg. C., when oxygen was bubbled through at atmospheric pressure, whereas 50 per cent was destroyed when no oxygen was passed through and for the next 3 hours the per cent destruction rose only to 67.7, one is led to believe that both in his experiments and in those of Delf a considerable portion of the destruction may have occurred during the first part of the first hour which was due to dissolved oxygen, and that the subsequent slower destruction was in part due to atmospheric oxygen.

Elimination of Oxygen by Vacuum

For this reason experiments dealing with the stability of vitamine C toward heat must take into account the oxygen in the product and in the cooking water, as well as atmospheric oxygen. Boiling for several minutes will eliminate the oxygen from the cooking water, but when heating below the boiling point the gases may be retained for hours in a supersaturated state.

Heat, of course, cannot be applied to eliminate oxygen from food products if the effect of heat on the vitamines is to be studied, or if the aim is to conserve the vitamines in any food industry. A vacuum exhaust may be utilized, but a vacuum is not successful unless the container is jarred to break up the supersaturated state in which the gas will persist for a long time, or unless the vacuum is sufficient to cause abullition. As an illustration, two experiments are given in Table IV, one with red raspberries, a product in which much air is trapped, and the other with uunpitted sweet cherries, in which air is not so apt to be mechanically held.

In order to determine the gas in these fruits they were placed in a wide-mouthed Erlenmeyer flask, covered with water, and closed with a two-hole rubber stopper. One hole carried an inlet tube with a glass stopcock, and in the other hole was inserted the inlet tube of the flask described above. At the end of each fraction the Erlenmeyer flask was completely refilled with water through the inlet tube, thus driving any gas collected under the stopper up into the receiving bulb. The size of the receiving bulb may be suited to the amount of gas obtained—a 500-cc. bulb being used in these experiments. Each succeeding fraction was obtained by reattaching the receiving bulb and again applying a vacuum. The container was kept quiet for every fraction except the last, to obtain which the Erlenmeyer flask containing the fruit was held by the neck in the left hand while the lower edge was given rather sharp blows with the palm of the right hand. In Exp. 1, 350 g. of berries were used in a 600-cc. flask, while in Exp. 2, 00 g. of cherries were used in a 950-cc. flask.

It will be noticed that as much or more oxygen was obtained in the last fraction as the total of the other fractions, and many times more than in the immediately preceding fraction in which the time and vacuum were the same. Air-free water was not used in these experiments. The oxygen, therefore, came in part from the water. This, however, does not alter the general principle involved. The large amount of gas obtained in the first fraction with a low vacuum in the case of raspberries is due to trapped air.

Table IV—Gas Obtained from Fruits

Fraction No.	Time of Exhaust Min.	Vacuum during Exhaust In.	Total Gas Cc.	CO_2 Cc.	Oxygen Cc.	Nitrogen Cc.	CO_2 Per cent	Oxygen Per cent	Nitrogen Per cent
			Expt. 1—Red Raspberries						
1	0.5	15	6.3	0.0	0.5	5.8	0.0	8.6	91.4
2	0.5	20	1.9	0.0	0.5	1.8	0.0	4.8	95.2
3	0.5	27	3.9	0.3	0.1	3.5	7.0	2.3	90.7
4	3.0	27	4.3	1.0	0.1	3.2	22.9	4.2	72.9
5[1]	3.0	27	13.0	5.1	0.8	7.1	38.9	6.2	54.9
			Expt. 2—Sweet Cherries (Bings)						
1	0.5	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.5	20	8.9	0.6	0.9	7.4	7.1	10.2	82.7
3	0.5	27	6.1	1.1	0.3	4.7	1.79	4.5	77.6
4	3.0	27	9.2	3.4	0.3	5.5	37.9	3.9	58.2
5[1]	3.0	27	11.3	4.8	2.0	4.5	42.8	16.9	40.3

[1] Container jarred for fraction 5.

The processes used in the canning industry lend themselves conveniently to the exclusive use of boiled water. In many factories it has been the custom to boil the water used for canning. This should be adopted in all factories.

Respiration of Fruits and Vegetables

The active respiration which takes place in fruits and vegetables tends to keep down the amount of dissolved oxygen in them, and also to leave the nitrogen, which is less soluble than oxygen, to fill the interstices. We have made determinations on certain fruits and found them practically free from oxygen, while in others we have found the gases to have practically as high oxygen content as the atmosphere and the total gas to be over one-fourth the volume of the fruit. We have found that green lima beans and peas (unbroken seeds), green corn cut from the cob (broken seeds), carrots (tubers) scraped and cut into disks, and cabbage (leaves) cut into slaw, if covered with an equal weight of water saturated with atmospheric oxygen, will, at room temperature, not only contain no oxygen themselves, but will have extracted all the oxygen from the water also at the end of 2 hours. No examination was made for shorter periods. The possibility should not be overlooked, however, that such active respiration might result in a more destructive medium, perhaps by an increased oxidation potential or similar condition. If this does prove to be the case, it suggests the possibility of preparing a more favorable condition for the protection of vitamine C, by allowing respiration for a time in an atmosphere of nitrogen. A study of this question and its application to canning is contemplated.

The gases in fruits and vegetables can readily be replaced by another gas by subjecting them to a vacuum and releasing the vacuum with the desired gas, but diffusion is quite rapid in some cases and subsequent exposure to the atmosphere must be avoided.

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[1] Presented before the Division of Agricultural and Food Chemistry at the sixty-fourth meeting of the American Chemical Society, Pittsburgh, Pa., September 4 to 8; 1922. Published also in the March issue of Industrial and Engineering Chemistry.

[2] J. Am. Chem. Soc., 44 (1922), 172.

[3] Indutrial and Engineering Chemistry, 13 (1921), 1115.

[4] Biochem. J., 12 (1918), 416.

[5] Dissertation, Columbia University, 1921.

[6] Industrial and Engineering Chemistry, 13 (1921), 1108.

Institute Surveys Wheat Products and the Baking Industry

Studies at the Food Research Institute of Stanford University, California, are mostly concerned for the present with wheat and wheat products, according to a report recently issued by the directors. Investigations are being made of crop estimating and reporting methods in the United States and abroad to ascertain the reliability of past and current statistics of crops, how far the bases upon which they are obtained are comparable, and in what way crop forecasts and reports may be made more accurate. Principles of cost analysis are being worked out, and statistics of wheat and flour production, domestic movements and imports and exports are studied in their relation to prices.

Economic developments in Europe, according to the report, are studied with special reference to their bearing upon the demand for wheat imports. In connection with this study of wheat products, a survey of the baking industry is under way, the economic aspects of which as a whole, particularly the bread-making industry, are investigated as a basis for research upon special problems.

Other studies upon which the staff of the institute are working are the physical properties and chemical composition of flours in relation to their baking qualities; the transportation of wheat and flour in the United States, with special reference to the development of the rate structure; factors limiting the expansion of food production with the growth of population; economic laws of productivity, with special reference to food production; the food elements in measures of standards of living.

The first of the institute series of publications, now in press, will be "Stale Bread Loss as a Problem of the Baking Industry," by Joseph S. Davis and Wilfred Eldred.

Importance of Haste in Handling Fruits and Vegetables

A series of experiments with spinach to demonstrate the physiological aspect of delay in handling green vegetables is described in an article in a recent issue of "The Canner," by Dr. Charles Thom of the United States Bureau of Chemistry. Discussing the process of food manufacture as it relates to sound food Dr. Thom pointed out the risks involved in gathering, packing, transporting, and storing produce before manufacture.

Summarizing the findings in the experiments with spinach, which were made by Mr. Linden, of the Bureau's laboratory, he says:

"Perishable fruits and vegetables ready to be gathered for market or manufacture are living, actively growing things. While growing they receive water (sap) through the stem and roots from the soil and evaporate water to the air. Life activities do not stop when the product is taken from the stem. The supply from the root is cut off, but expulsion (transpiration) of water from the vegetable or fruit goes on. If the product is exposed to the air, that water evaporates. If berries, pulled corn, spinach, pea vines, string beans or asparagus are brought together into masses, bundles, baskets, pails, wagon loads, and perhaps the containers bunched into carloads, the evaporation of water is at least partly stopped and the center of the mass becomes wet. Again growth processes produce heat. Each fruit while exposed to the air remains cool from evaporation and air cooling. If we bunch many of them together, cooling and evaporation at least partially stop and the mass becomes warm as well at wet. Respiration adds to the destructive factors present by the consumption of sugars or other carbohydrates present and the production of large amounts of carbon dioxide so that depleted vitality and depleted food value both appear. Under such conditions the half-million or so bacteria initially present are able to multiply with tremendous rapidity.

"This is exactly what happened in the spinach samples described. It begins in every lot of perishable material brought together. To get initially sound products from the point of production into the can in good condition we must establish control of two factors, (1) the temperature at which the products are handled and (2) the period of time between gathering and canning. Control of either or both is clearly possible. Exactly how this control shall be exercised in any particular situation wll depend upon physical, climatic, and economic conditions."

New Buttermilk Test Shows Higher Fat Losses

A new test for buttermilk recently devised by the American Association of Creamery Butter Manufacturers is described in the "Dairy Record" for February 7, by J. A. Newlander, who considers it superior to the Babcock test, which, in buttermilk and skimmilk, falls short of the chemical method. In the association's test m-butyl alcohol and sulphuric acid are the two chemicals used. Mr. Newlander describes the test as follows:

1. Add the chemicals and buttermilk to the test bottle in the following amounts and the order indicated: (a) 2 c.c. of n½butyl alcohol; (b) 8.8 c.c. of buttermilk; and (c) 7 to 9 c.c. of sulphuric acid depending on its strength. The right amount is being used when the fat column is golden yellow.

2. Mix contents of bottle thoroughly.

3. Centrifuge for six minutes at usual speed.

4. Add hot water to fill bottle to base of neck, and whirl two minutes.

5. Add balance of hot water to bring fat into the neck and again whirl two minutes.

6. Temper to 135-140 degrees Fahrenheit and read. Double the reading to obtain the per cent of fat.

"This test," says Mr. Newlander, "gives results corresponding closely to those of chemical analysis, and hence must be more correct than the older method. Apparently the alcohol aids the sulphuric acid in freeing the fat so that all of it can be centrifuged to the surface. It is an easy test to run, more so than the ordinary method, because the buttermilk is more readily dissolved, and less centrifuging is required."

Filled Milk Bill Passed by Senate

The filled milk bill passed the Senate March 1 without a record vote, efforts to amend it failing by two to one votes. The bill defines filled milk, declares it an adulterated article of food, injurious to the public health, and provides that its sale constitutes a fraud upon the public. Shipment in interstate and foreign commerce is therefore barred.

The Best Things From Current Food Magazines

A Digest of the Month's Periodicals for the Busy Reader

Use of Peanut Butter as Standard Food is Growing

FROM its use as a delicacy for invalids, peanut butter has become standard food, and is probably the most important peanut product manufactured in the United States. Six or eight million bushels were used in its production in 1919, at least five times the quantity used for this purpose in 1907.

In an article on the manufacture and use of peanut butter, in the *Peanut Promoter* for February, H. C. Thompson, formerly horticulturist of Horticultural and Pomological Investigations of the United States Department of Agriculture, says: "Peanut butter contains one and a half times as much protein, more than three times as much fat, nearly five times as much ash, and three times as much fuel value as round steak. In addition to this, peanut butter contains 17.1 per cent of carbohydrates, while steak contains none. Pound per pound, peanut butter has a much greater food value than round steak, though it sells for a lower price."

Only the best grade of peanuts should be used in the manufacture of butter and for this reason most manufacturers buy their peanuts from the cleaning and selling factories, where they have already undergone the cleaning, shelling and grading processes. Virginia Bunch, Virginia Runner and Spanish are the varieties most commonly used for the purpose. The equipment of the factory consists of roasters, blanchers, picking tables, grinders, bottle-filling, capping and labeling machines and the necessary boilers to run the machinery, and suitable facilities for storing, packing and shipping the raw material and the finished product.

The process of making the butter is very simple. "Usually nothing is taken from the peanuts," says Mr. Thompson, "except the germs and red skins, and nothing is added except a small quantity of salt. Many persons have the idea that peanut butter consists of peanuts mixed with oil. As shelled peanuts contain from 13 to 50 per cent of oil depending on the variety, it would be unnecessary to add oil."

A cheap and wholesome peanut butter may be made at home, by means of an ordinary meat grinder. Peanuts may be bought roasted from the dealer, or they may be roasted in the home oven. If bought unshelled, they should be roasted in the shell and cooled. After cooling and shelling, they may be bleached by rubbing over a wire-bottom screen to remove the red skins and loosen the germs. The meats may then be cleaned by pouring from one vessel to another in the open air, where the wind will blow out the skins. Salt may be added before or after the grinding, and the meats run through the grinder, using the finest burrs, until the paste is sufficiently fine.

When made at home, Mr. Thompson says, peanut butter costs much less than the price paid in the stores; it should not, in fact, exceed fifteen or twenty cents a pound.

Pasteurization Must Be Followed by Careful Handling

THAT too many health officers are prone to assume that because milk passes through a pasteurization plant it is ipso facto safe, is the opinion expressed by Dr. Edward S. Godfrey, Jr., director of the Division of Communicable Diseases of the New York State Department of Health in an article in *The Nation's Health* for January 15.

Dr. Godfrey reports the findings of an inquiry made to ascertain the frequency of communicable disease carried by pasteurized milk. Questionnaires addressed to the executive officer of every state health department, to the health officers of twelve of the largest cities in the United States, and to several of the most prominent teachers in the public schools, asked for a description of any outbreak of communicable disease in which milk that was pasteurized, or even purported to be pasteurized, was found to be or suspected of being the agent of transmission.

Sixteen outbreaks were reported. "In one instance," according to Dr. Godfrey, "the milk probably had nothing to do with transmitting infection. In four instances the milk was pasteurized by the 'flash' system or some other method which failed to conform to the standards of the health authorities. In one instance, the thermographic records for several days preceding the outbreak could not be found, hence there is a doubt as to whether a proper temperature was reached and maintained for the proper length of time. In this instance there was also an opportunity for the milk to have become infected subsequent to pasteurization.

"In seven instances in which pasteurization was properly carried out, the evidence as to subsequent infection is conclusive in all but two. This is demonstrated by the fact that milk from the same pasteurizing plant handled by other dealers or drivers or delivered elsewhere than in the sharply defined focus of the outbreak did not spread infection. In one of the two exceptions there was very strong circumstantial evidence of infection by the employee who capped the bottles. In the other the source of infection was not located. Although it could be considered that infection may have passed through the pasteurizer, there is no evidence that it did."

Dr. Godfrey emphasizes the fact that pasteurization is safe only in safe hands; that it destroys only that infection introduced at the farm or in the process of handling at the dairy before being heated. If subsequently infected transmission of infection is quite as certain as with raw milk.

"Perhaps the most convincing evidence of the benefits of pasteurization from the standpoint here considered," says Dr. Godfrey, "is to be found in the contrast between the experience of New York City and New York state, exclusive of the city, since January 1, 1917. Although in 1921 about 54 per cent of the milk supplied 'up-state' by licensed dealers was pasteurized, it is probable that when milk consumed by owners of cows and that sold to neighbors is included, the percentage of pasteurized milk would not exceed 35 per cent. In New York City 98 per cent of the milk is pasteurized. The population of New York City is 15 per cent larger than that of the rest of the state and much of its milk is shipped from considerable distances. During this period the city has had one outbreak—a typhoid outbreak five years ago while thirty-seven have occurred in the rest of the state. This is certainly a remarkable contrast even making allowance for the fact that outbreaks and their sources are more easily discovered and traced in smaller places than they are in large ones."

Illustrating the tendency of milk-borne outbreaks to reverse the usual age incidence of the disease, Dr. Godfrey tells of three instances which occurred during the last year in New York. In a milk-borne outbreak the percentage of cases over twenty years was 28, in another 32; in an outbreak of milk-borne diphtheria it was 69, with no peculiarity of age distribution among the exposures to account for it.

The potential danger from infected ice cream is illustrated by three outbreaks. "The manufacture and handling of this widely consumed product," Dr. Godfrey points out, "is deserving of closer supervision than that of any other food product except milk itself."

Inferior Quality of Tin Plate Is Deplored by Packer

"THE more one studies the problem of blackened sweet corn in tin plate containers, the more he is inclined to believe that the real cause of discoloration lies somewhere in the variable quality of certain small areas, sometimes microscopic, of the steel base plate used in manufacturing tin plate," says W. E. Elwell, in *Canning Age* for February. X-Ray examinations made by Mr. Elwell of small areas of plate taken from cans containing blackened products all show, according to his report, that there is a marked difference in the reaction of different plates and different areas of the same plate to the X-Ray. The samples of plate taken from cans carrying black discoloration practically all show areas of diminished resistance to the ray, some of them very small, other large areas, but shadowy. Plates from cans that did not contain black discoloration are much more uniform in their resistance to the rays throughout their whole area.

"It is deplorable that the cans of today should be so very generally discolored on the inside by both tin and iron sulphide," says Mr. Elwell. "Who can show us a can made of 'coke plate' and packed within the past two or three years with any products carrying proteins that is not badly discolored inside? And who is there that has been a packer for twenty-five or thirty years that has not seen and does not remember that cans of the former period often after standing for years would open up brighter on the inside than they were on the outside?

"I assume that you have all read the report of the work done by Dr. Fitzgerald and associates which was begun in 1919 and the results of which were published in 1922. . . . Have you noticed the final recommendations of the Fitzgerald report? They every one of them impose extra care upon the canner and some of them involve extra time and expense, and not a single word that would suggest that the plate manufacturers or the can makers be burdened with any effort to restore the container to its former far more satisfactory quality.

"Of course, you are all aware of the tendency of recent years to reduce the gauge of plate used in making all sizes of cans until some of them are so thin that the flanges crack in handling; but do you know that this reduction in gauge means a saving of 10 per cent in steel tonnage? Were you, the user, consulted about this? And do you know that the amount of tin coating on coke plate has been reduced from approximately two and one-half pounds per base box to an average of one and forty-one one hundredths pounds per base box? Were you ever consulted in regard to these improvements (?) in the product you pay out so much good money for? Please consider that these remarks are in the nature of an aside, for it is not contended that either the gauge of the base plate or the thickness of tin coating is a major factor influencing the formation of black discoloration. But these two changes are causing the canners a great deal of trouble through their tendency to increase greatly the percentage of buckles, leaks, and rust in any pack as will be demonstrated by exhibits to be shown in connection with another report to be presented at a later time. There is no apparent attempt being made to remedy these effects at their source. These changes would, therefore, indicate a tendency on the part of tin plate manufacturers towards a disregard of the suitability of their product for the purpose for which it is intended."

Tests Show Inefficiency of Boric Acid Compound

THE value of boric acid canning compound in food preservation is discussed in the February *Journal of Home Economics* by Max Levine, of Iowa State College, who relates the results of experiments to ascertain the efficiency of the chemical. The compound used was bought on the open market in Minnesota and Iowa, and consisted of 95 per cent boric acid and 5 per cent common salt. Fifty-nine packages were weighed and found to contain from 23.5 to 34 grams with an average of 28 grams per package. This quantity is supposedly sufficient for 4 quarts, thus allowing an average of 7 grams of canning compound per quart. To ascertain its germinal efficiency 7.25 grams per quart were employed, in agar.

From these experiments, "it appears quite evident," Mr. Levine states, "that the boric acid canning compound exerted a selective antiseptic action but that this effect was restricted to bacteria which are rarely associated with spoilage of canned foods, whereas such objectionable and dangerous forms as Cl. sporogenes and Cl. botulinum grew luxuriantly in its presence."

A series of vegetables and other edibles was also prepared to test the efficacy of the compound for home canning. The foodstuffs studied were asparagus, rhubarb, carrots, corn, string beans and green peas. They were perfectly fresh, and all conditions were most favorable for keeping the foods if the method of canning employed were adequate. The canning was done by a woman who had had considerable successful experience in such work. Directions given on the booklet accompanying the compound were carefully followed. The experiments indicated that the compound was quite inefficient in the preservation of food.

"It is interesting to note," says Mr. Levine, in describing the results of the experiments in canning asparagus, "that those jars prepared without boric acid spoiled with the evolution of obnoxious odors, whereas, in the presence of the boric acid, spoilage was indicated by evolution of gas and bulging of caps but there was no offensive odor. The boric acid evidently exerted a selective antiseptic action on some of the proteolytic putrefactive forms. This characteristic seems particularly objectionable because it deprives the consumer of his most available test to detect spoilage, namely, the odor of decomposition."

A series of experiments were also executed to ascertain whether food infected with Cl. botulinum may be successfully preserved by use of the compound, or if not preserved, whether the organism is prevented from producing its powerful toxin. These experiments indicated that, if a foodstuff happens to be contaminated with the organisms of botulism, efforts to preserve it with the boric acid compound will probably be fatal.

Experiments made on two young rabbits by J. C. Weldin, who collaborated with Mr. Levine in the work, indicated that the effects of the compound on the body are harmful. The rabbits were fed on alternate mornings with oats and ground alfalfa to which had been added sufficient of the compound (in water solution) to make a concentration of 8.8 grams per quart of dry feed. The evening feed contained no compound and was as varied as possible. After forty-four days the experiments were discontinued because of the emaciated condition of the rabbits, which, although they were put into a pen with normal rabbits, were unable to recover and died in a short time.

According to the conclusions reached by Mr. Levine, the method of canning with the boric acid compound is far inferior to the "cold pack" process recommended by the United States Department of Agriculture for preserving food.

Foodstuffs Around the World

Condensed Milk Is Recommended by Hungarian Physicians—Rumanian Caviar Replaces Product from Russia—American Honey Is Popular in Denmark

British Fruit Industry Aroused

Producers of dried fruits throughout the colonies of Great Britain are disgruntled over the alleged discouraging reception of their goods in British markets, largely because merchants favor the Spanish and Greek trade, says a statement from Alfred Nutting of the American Consulate at London, to the Department of Commerce. Large quantities of Australian and South African dried fruits are available in London at the present time, but are in no demand. In addition, more than 200,000 cases of Australian canned fruits have recently arrived. The colonies consider that the British army and navy should partake more lavishly of their goods, rather than the similar articles from foreign climes. A publicity campaign to popularize empire food products in the principal towns in Great Britain has been suggested, prizes going to the best-dressed shop windows. The idea contemplates that all the British Dominions should take part.

American Meat Used Less in Austria

American sales of meats in Austria have fallen off to a point where canned corn beef is about the only American meat that finds a favorable market. According to Assistant Trade Commissioner Allport, Vienna, in a report to the Department of Commerce, this condition is due to the increasing imports of meat from Jugoslavia at prices with which the American articles cannot compete. Sales of American lard have also decreased considerably although Austria still provides a favorable market for this and other fats.

Dried Shark African Delicacy

Having its beginning before the period of modern history, the fish-drying industry of the Canary Islands has today developed to the point where it supplies practically all the West African ports, which take the entire annual output of practically 3,500 tons. Not only are fish similar to cod and hake dried, but the fishermen bring in tons of sharks of the marrajo and cazon species, says a report to the Department of Commerce from Vice-Consul Greenup, Las Palmas. The remarkable longevity of this industry is probably due to the fact that the Afro-Canary fishing banks are considered inferior to none; they are warm and shallow, producing marine growth for the nourishment of unlimited numbers of fish. At no time of the year is the sea too stormy for fishing, and the anchorage is extensive and good. The aridity of the coast and islands affords unlimited natural drying grounds.

Foreign Milk Reaches Broader Markets

The dropping off of over one hundred million pounds in the exports of canned milk from the United States during 1922 compared with 1921 is thought by the Foodstuffs Division of the Department of Commerce to be an indication of the serious efforts being put forth by foreign producers to recapture world markets. Average shipments during the years 1910 to 1914 were 17,500,000 pounds annually. In 1919 exports reached the phenomenal total of 852,865,414 pounds, whence a rather rapid decline set in. It should be remembered, however, that the 1919 world consumption of canned milk was extraordinarily high, owing to abnormal conditions immediately succeeding the war. In 1921, 299,168,168 pounds were exported, while last year the exports totaled 193,686,904 pounds.

American Honey Popular in Denmark

During 1921, 88,900 kilos of honey, valued at 137,000 crowns, (average for crown in December, 1922, $0.21) were imported into Denmark, the greater part of this coming from the United States in bulk. In the first six months of 1922, Danish imports of honey amounted to 36,600 kilos, of which the United States supplied 15,900 kilos, Germany 9,500 and Australia 4 000 according to advices to the Department of Commerce from the Assistant Trade Commissioner, H. Sorenson. Retail prices of honey have fallen considerably during the past year. Current prices are: California honey, 1.75 and New Zealand honey, 2.25 crowns per kilo. The New Zealand price, however, includes the glass jar in which the honey is packed. No such container is provided in the California variety. Owing to the rather severe climate in Denmark the domestic production is of small proportions and appears to be slowly dwindling.

Paris Eats 359,000 Cattle a Year

Practically all the fresh meat introduced into Paris comes from the group of slaughter houses at La Villette, in the outskirts of the city. One of the directors of this group, M. Rollin, has recently made a report on its operations. The report of Assistant Trade Commissioner Green to the Department of Commerce shows that during the year 1921 359,140 head of cattle were handled, as compared with 332,837 in 1913 and 262,953 in 1915, one of the first years of the war. Entry of sheep during 1921 totaled 1,127,526 head, as compared with 993,802 in 1916 and 1,507,715 in 1913. Lambs received during 1921 totaled 208,526, as compared with 176,341 during the last pre-war year. Pigs, on the other hand, are not received in as great a number as before the war. The 1921 total was 424,988 compared with a figure of 459,258 for 1913.

American Flour in Austria

American flour will again dominate the Austrian market as it did at this time last year, says C. H. Foster, American consul at Vienna. Each month Austria requires from fifty to sixty thousand tons of bread-grains and flour, the preferred varieties of grain being hard winter; Manitoba and La Plate (Barusso and Rosafe) wheat, western No. 1 and No. 2 rye. The most popular grades of flour are Hungarian, Jugoslavian and American patents; then come the straight grades, first clears and fancy clears from American sources. American flour is considered about 10 or 15 per cent inferior to Hungarian brands, as bleached flour is not in favor in Austria. The government keeps on hand a stock of sixty to a hundred thousand tons of flour, and this practice is an important factor in the regulation of bread prices. Although at present the trade in flour is free and the government no longer fixes the price of bread, there exists an understanding between the government and the association of bakers according to Mr. Foster.

Government Seeks Canned Milk

American condensed milk has been "sold" to the Hungarian government. Upon the request of the purchasing department of Budapest, Digby A. Willson, the American consul in that city, secured samples of American canned milk and turned them over to the Chemical Division of the municipality which, after careful examination, reported them to be excellent in every way. Shortages of fresh milk are felt from time to time through Hungary, where canned milk has never been used to any appreciable extent. The American consul has endeavored to interest the various important merchants as well as the public employers in American evaporated milk and the Public Provisioning Department of the municipality of Budapest has now informed the Consulate that it desires the exclusive agency for the sale of such milk in Hungary. This government department buys and sells for the benefit of the public employes, and the general public is now also privileged to buy from it. Budapest physicians are also partial to the use of condensed and particularly evaporated milk. They recommend it to their patients both because of the poor quality of the fresh article and on account of the satisfactory results achieved among the children and hospital patients by the American Relief Administration and the American Red Cross.

German Dehydration Plans

Realizing the possibilities of dehydration, exhaustive studies are being made throughout Germany today and there are now nineteen plants devoted to the dehydrating of vegetables and fruits, especially potatoes. Several of the earlier plants E. Verne Richardson, the consul at Berlin, informs the Department of Commerce, have been entirely reconstructed and others have been replaced altogether with greatly improved installations. One complete dehydrating plant has just been shipped to Montevideo for erection and operation there, and ten such plants to Servian destinations.

No More Camouflaged Trinidad Cocoa

The "claying" of cocoa beans in Trinidad has been declared unlawful by an act just passed by the legislature, and now that Trinidad cocoa will have to be sold without the use of any clay to give it a uniform appearance, whether good or bad, it is probable that much attenion will be given by the growers to promoting quality, says Henry D. Baker, the Trinidad consul, in a report to the Department of

Commerce. It is also believed that American manufacturers of drying and dehydrating equipment would be interested in this legislation since the need for new equipment has now become greater. With an area slightly smaller than that of the state of Delaware, Trinidad produces from eight to ten per cent of the cocoa consumed in the world, and in proportion to its area it is easily the largest producer. The crop of 1921 amounted to 75,729,640 pounds, while from January 1 to October 1, 1922, 41,674,531 pounds were shipped from the island. Notwithstanding the increased competition of Gold Coast cocoa, Trinidad cocoa will no doubt still be in good demand on account of its high flavoring value and for blending with other cocoas.

Seville's Olive Crop

Official statistics of the olive crop of the Seville district will not be available until too late to be useful, but unofficial estimates forwarded to the Department of Commerce by the consul, William P. Burdett, indicate that the crop will approximate 3,280,000 gallons (205,000 fanegas), consisting of 1,680,000 gallons of queens, and 1,600,000 gallons of manzanillas. That part of the Seville olive crop available for curing has turned out to be much smaller than was anticipated. As compared with the 1921 crop of 5,600,000 gallons, and the 1920 crop of 9,600,000 gallons, the 1922 production shows a decrease of 41 per cent from 1921 and of 66 per cent from 1920. The carry-over from the Seville crop of 1921 is approximately 375,000 gallons, mostly culls, seconds and other grades unfit for shipment. It is customary to assume that 25 per cent of the total olive production will be of grades not suitable for shipping and should, therefore, be deducted from the exportable amount.

War's Sweet Legacy to Portugal

The war has left the Portuguese with a bright sweet taste in their mouths. The people of Portugal are not eaters of sweets as the Anglo-Saxon peoples are, but they do consume large quantities of cocoa powder in the beverage or "hot chocolate" form. With the introduction of hundreds of "five o'clock" tea rooms since the war, small cakes made partly of chocolate or covered with a chocolate coating are used in large quantities, according to Vice-Consul Mooers, Lisbon. Today, in an attempt to economize, many people use chocolate in the beverage form for lunch, whereas before a more sumptuous meal would have been in order. For the last three or four years, an increasing demand on the part of the public for cocoa and chocolate goods has steadily taken place and with it a demand for candies in more assorted colors and flavors. The candy and chocolate industry in Portugal is meeting the new conditions suitably and has grown to such an extent that its products are beginning to find world markets.

Paraguayan Packing Plant Reopened

Liebig's Meat Extract Company is reported to have just completed negotiations for the purchase of a large packing plant owned by an American concern at Asuncion, Paraguay. This plant was built and operated a short time during the war, but was closed down soon after the armistice because of lack of demand for canned meats throughout the world markets. According to Harry Campbell, American consul at Asuncion, in a report to the Department of Commerce, the Liebig company, which has plants in other parts of South America and large holdings in land and cattle in Argentine and Paraguay, expect to have the new plant in operation within a few months for the manufacture of meat extract and other products.

Danish Butter Finds Favor Here

Danish butter is finding its advocates in the United States in greatly increasing number, if import statistics are any guide. During the winter months large shipments of butter have been coming to the United States, notwithstanding the import duty of eight cents a pound levied as a result of exceedingly large imports of such butter to the United States during the winter of 1920-1921, states Consul General Letcher, Copenhagen, in a report to the Department of Commerce. The recent shipments are due partly to a scarcity of butter upon the New York market and to the fall of Danish butter prices in England, attributed to unusually large shipments to England of butter from Australia and New Zealand. The production of Danish butter for the year ended March 31, 1922, was 231,000,000 pounds, England taking 68.6 per cent of the entire output. The next largest buyer was France, which took 8.7 per cent.

Cooperative Tea Packing in Formosa

Age-old ideals, thousands of Chinese tea-growers, each of whom thinks he is entitled to extra prices for his special quality tea, are likely to be shattered by Japan's proposal to establish cooperative growing and packing of teas in Formosa. Encouraged by a more favorable season, the government general of Taiwan is again considering concrete plans to reorganize the tea industry of the island along the lines of the "estate system" of India, Ceylon, and Java, says Consul Goodier, Taihoku, in a report to the Department of Commerce. Assistance will probably be given in the form of subsidies to the growers toward the purchase of fertilizers, the maintenance of small model plantations for educative and selective experiment work, granting seedlings, and the further loan of machinery. Central packing factories are also contemplated. As this will probably constitute a rather noticeable initial charge against the price of Oolong tea in America, notwithstanding a more vigorous contemplated advertising campaign centralized in New York City, the government will act with caution as it is not certain what effect the use of machinery will have upon the distinctive flavor of Oolong.

The Town the Cheese Made Famous

Roquefort makes the cheese and the cheese has made Roquefort what it is today, for it was in that small town of France many years ago that the tiny spores of a microscopic mushroom happened into some sour milk, and Roquefort cheese had a beginning. Today large quantities of this famous cheese is exported to most of the European countries and to the United States, says Vice Consul Pulver, St. Etienne, in a report to the Department of Commerce. In order to assure a regular output, which was next to impossible when the first steps of the process were intrusted to individual farmers, the cheese manufacturers have established in recent years milk depots where fresh ewe's milk is delivered daily and undergoes special treatment. The milk, after having been filtered and allowed to turn, is pressed into molds and sown with the spores of a microscopic plant, which assures its ripening or mellowing. After having been drained, the fresh cheese is brought into Roquefort where it is placed in natural cellars which nature has provided in the rocky hillsides there where it is left from thirty to ninety days. These cellars account, in a large part, for the location of this industry at Roquefort. In 1914 about 22,000,000 pounds of this cheese were produced and the annual production is now estimated at 18,000,000 pounds. In October over 616,000 pounds of this cheese emerged from the hillside caves and arrived in this country.

Converting Cattle Into Flour

One solution to the problem of the tremendous surplus of beef cattle in Australia and New Zealand has been offered, and initial efforts appear to have been along the right lines. Declining world markets for these cattle have resulted disastrously, and American Consul MacVitty, Auckland, has informed the Department of Commerce of Australia's effort to convert surplus cattle into cash. Meat flour is being manufactured just as successfully as milk flour is being made in this country. By a special process of drying and grinding, a meat flour is produced that keeps indefinitely and contains all the body building and nutritive value of fresh meat, and at a cost which permits easy retailing. The flour is really next to raw meat, for during the process the meat is not cooked but dried at a very low temperature, and all that is actually lost during the process is about 60 per cent of water and the deterrent properties. During the drying the meat is squeezed and all the fats, blood, and juices are expressed. These are then treated, all deterrent properties are destroyed and finally the juices are placed back with the meat. The whole is then dried and during this process the various gasses allowed to escape. That which has been the cause of failures of many experiments for the past fifty years has been removed in this new Remus process. Owing to its fine form, meat flour can be cooked more quickly than ordinary meat and has an economical advantage in the saving of time and fuel.

Rumanians Supply Caviar to America

Caviar is now being shipped to this country from Rumania and is replacing the delectable product which came from Russia during the old days. In quality it is understood to compare favorably with the best grades of Russian caviar, says Vice-Consul Bigelow, Bucharest, in a report to the Department of Commerce. This effort of the Rumanians to supply the American market may meet with success, as in pre-war times much caviar was exported from that country. During the greater part of 1920 and 1921 caviar exportation was prohibited by the Rumanian government.

Europeans Big Coffee Drinkers

Europe's coffee appetite in 1922 called for 8,743,000 bags or approximately 1,189,048,000 pounds. During the war, Amsterdam was the principal coffee market of Europe, and since the war only Havre, France, has excelled it. According to Frank W. Mahin, consul at Amsterdam, about 20 per cent of the wholesale coffee business of Europe is transacted in that city. The visible supply of coffee in the Netherlands at the end of 1922 was 404,000 bags; in all Europe, 2,254,000 bags. The stocks now in Europe are composed of about two-thirds of Brazilian coffee, the rest coming from the West and East Indies.

Association and Convention Calendar

American Association Creamery Butter Manufacturers. Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Association, 1135 Fullerton avenue, Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N. W., Washington, D. C. Secretary, Charles L. Parsons

American Cider and Vinegar Manufacturers' Association, 841 Powers Building, Rochester, N. Y. Annual meeting, June 6 Rochester, N. Y. Secretary, Paul Benton.

American Corn Millers' Federation, 332 South La Salle street, Chicago. Secretary, T. M. Chivington.

American Dietetic Association, Washington, D. C. Secretary, Beta Luther, Children's Hospital, Boston, Mass.

American Macaroni Manufacturers' Association, 26 Front street, Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Association of Products from Corn, 208 South La Salle street, Chicago. Annual meeting early in the year. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Association, 52 Park place, New York. Secretary, H. F. Thunhorst.

Association of Operative Millers, Postal Telegraph Building, Kansas City, Mo. Next convention, June 4 to 9, 1923. Secretary, M. F. Dillon.

Biscuit and Cracker Manufacturers' Association of America, 90 West Broadway, New York. Convention, May, 1923, Seretary, R. T. Stokes.

Flavoring Extract Manufacturers' Association of the United States. Secretary, Gordon M. Day, Day-Bergwall Co., Milwaukee, Wis.

Institute of American Meat Packers, 509 South Wabash avenue, Chicago. Secretary, W. W. Woods.

National Coffee Roasters' Association, 64 Water street, New York. Manager, Felix Coste.

National Association of Ice Cream Manufacturers, 155 North Clark street, Chicago. Secretary, N. Lowenstein.

National Association of Retail Grocers, 416 R. A. Long Building, Kansas City, Mo. Next annual convention at St. Paul, Minn., June 23 to 28, 1923. Secretary, H. C. Balsiger.

National Canners' Association, 1739 H street, N. W., Washington, D. C. Secretary, Frank E. Gorrell.

National Confectioners' Association, 11 West Washington street, Chicago. Convention at Atlantic City, May 23, 24 and 25, 1923. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan avenue, Chicago, Ill. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana avenue, Washington, D. C. Secretary, A. M. Loomis.

National Food Brokers' Association, 326 West Madison street, Chicago. Secretary, Paul Fishback.

National Macaroni Manufacturers' Association, Braidwood, Ill. Next meeting, June, 1923. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I street, N. W., Washington, D. C., Secretary, Charles W. Holman.

National Paper Box Manufacturers' Association, 112 North Broad street, Philadelphia. Annual convention, May 9 to 11, 1923, Claypool Hotel, Indianapolis, Ind. Secretary, William W. Baird.

National Pickle Packers' Association, 326 West Madison street, Chicago. Secretary, F. A. Vickers.

National Wholesale Grocers' Association. M. L. Toulme, 6 Harrison street, New York, secretary. Convention in St. Louis, Mo., May 16, 17 and 18.

Rice Millers' Association, 609 Maison Blanche Annex, New Orleans, La. Convention, May 31, 1923. Secretary, F. B. Wise.

Meat Packers' Institute Starts

A series of lectures to furnish special training to intermediate sub-executives of promise already engaged in the meat packing industry, which opened on February 13 in Mandel Hall, Chicago University, constituted one of the first steps in the plan of American meat packers to develop a combined educational institution, research institute, trade association and industrial museum (see The American Food Journal for November, 1922, page 11). The lectures are under the auspices of the School of Commerce and Administration of the University and the Plan Commission of the Institute of American Meat Packers.

The first of the series which was attended by representatives of agricultural, business and educational organizations, as well as persons engaged in the meat packing industry, was given by Henry C. Wallace, secretary of the United States Department of Agriculture. Thomas E. Wilson, president of the institute, also addressed the students describing the development plan and the benefits which it is hoped the meat packing industry will derive from the various courses. Since it is contemplated that the scope of the institution will be national, Mr. Wilson explained, printed copies of all lectures will be distributed to the more than two hundred and fifty member companies for use in their organizations through discussion groups, study classes, and by other means.

Members of the institute have no intention of turning "over their businesses to young graduates on whose diplomas the ink is still moist," said Mr. Wilson. "The term intermediate sub-executives is meant to be very broad, including plant foremen, assistant heads of departments, and others. Any one not covered by that term can consider himself included in the phrase 'prospective departmental heads,' for the history of the packing industry holds ample evidence of the fact that any meritorious worker in the ranks today is the potential executive of tomorrow. To me, this possibility, this opening to advancement—with cases studding the record of our business every year, every month, every week, almost every day—is one of the most inspiriting things about the packing industry. There is no inclination to change it.

"The members do not concede, nor will educators maintain, that a collegiate institution, no matter how highly specialized, can graduat young veterans of twenty-one who will be qualified forthwith to run a packing house. The thought on the contrary is this:

"Just as there is no adequate provision for giving a broader outlook to men of promise already engaged in the packing industry, who may wish to supplement their training, so, too, there is no adequate way by which the industry can draw to itself well trained beginners or specially trained scientists. Like other industries, the packing industry attracts a number of college educated men. But unlike other industries, the packing industry has no way of drawing to it college trained men whose training fits them especially for this industry. The steel industry, the textile industry, the mining industry, and others draw men whose college educations have been designed to make them especially serviceable to these industries. Not so with meat packing. The college man who comes to meat packing would feel as much at home in any of a half-dozen other industries."

The sum of $150,000 which was sought to finance the initial developments of the institute plan for a three-year period, said Mr. Wilson, has already been raised.

Canned Foods Sales Increase

As a means of stimulating interest in National Canned Foods Week, March 3 to 10, the National Canned Food Weeks Committee recently issued a report showing the results of Canned Foods Week in 1922. Eleven per cent of the letters received during the year from retail grocers throughout the country indicated increased sales of from 100 to 400 per cent, due to the campaign, according to this report. Twenty per cent of the grocers reported increases of from 40 to 70 per cent, another 20 per cent reported an increase of from 20 to 33 1/3 per cent. Twenty-five per cent of those from whom letters were received reported their sales increased but did not give the percentage of increase; 8 per cent reported no increase in sales.

These results, the committee states, were considered excellent, considering the prevailing business conditions, and the fact that campaign appropriations were limited and the time for preparation short. The national organizations which last year cooperated with the committee in carrying out its plans also backed the campaign for 1923. These are the National Association of Retail Grocers, the National Chain Store Grocers' Association, the National Wholesale Grocers' Association, the American Wholesale Grocers' Association, the National Food Brokers' Association, the Canning Machinery and Supplies Association and the National Canners' Association.

Ohio Wholesale Grocers Charged

United action tending to force manufacturers to guarantee against decline in prices is charged against the Ohio Wholesale Grocers' Association Company and its stockholding members in a complaint issued by the Federal Trade Commission. The association, according to the complaint, compiled and circulated among its members lists of manufacturers guaranteeing against price decline and of those who reduced prices without protecting wholesalers on their unsold stocks by such guarantee. This cooperative method of discrimination the commission holds to be unfair, since it has a tendency to destroy competition and to substantially lessen independence of action on the part of individual manufacturers of food products in their dealings with stockholding members of the respondent association. The association and its members have thirty days in which to answer the charges before a further hearing will be set by the commission.

Thirteen States Produce Nearly All Maple Sugar

Average Annual Production Over Past Five Years 35.000,000 to 40,000,000 Pounds, Says Official Report

The average yearly production of maple sugar during the last five years in the thirteen principal producing states of the country has been from thirty-five to forty million pounds, according to figures of the Bureau of Crop Estimates given in a report by the Vermont Maple Sugar Makers' Association of investigations into the making of maple sap products. In 1909 these states—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Indiana, Michigan, Ohio, Wisconsin and Minnesota—produced 98.4 per cent of the maple syrup and 99 per cent of the maple sugar of the United States.

The report of the studies made by the Vermont Association has been prepared by A. W. McKay, of the United States Department of Agriculture, who was responsible for the larger part of the investigation, and is published by the Vermont Agricultural Experiment Station (Bulletin 227). It includes a survey of the maple sugar industry in the United States, and a discussion of the problems which confronted the Vermont producers in their effort to increase the consumption of maple sap products, leading to the formation last year of the Vermont Maple Products Cooperative Exchange.

The demand for pure maple sugar products, the report points out, is steadily diminishing, although residents, or former residents, of maple sap producing regions usually prefer the pure maple. As a result, much of the pure maple sap is sold for flavoring purposes, and generally at a lower price than the sap producers consider profitable.

The problems confronting the producers were: The improvement of methods of gathering and concentrating the sap in order to increase the output of first grade sugar and syrup; the standardization of grades, packages and handling methods; the provision of marketing machinery for the regular and uniform distribution of pure maple-sap products to the consumers; the means of expanding the market and increasing consumption.

The processing of maple products, the equipment needed by the farmer and the cost of transportation in Vermont were first studied. A study made by M. P. Rasmussen in 1921—a year of high labor—is quoted in the report as showing that the average cost to sixty farmers was $1.50 a gallon. The manufacturing cost per gallon—also obtained during a period of high prices—is given as approximately $.50. In 1922 the cost was probably ten to fifteen cents less.

In January, 1922, the Vermont Maple Sugar Makers' Association approved a plan for the organization of a cooperative association and a committee was appointed to proceed with the formation of local associations, which, later, were federated in a central exchange.

The basis of this plan, according to the bulletin, is the local association, made up of producers using the same shipping point, or residing in the same town, or in any geographical division which will make a compact unit. The purpose of the local association is to act as a unit for the dissemination of market information among its members, information relative to methods of gathering and concentrating sap, and other matters of general interest. It will also act as an assembling and shipping unit, and the secretary or manager of the local association will store or ship the syrup as directed by the central manager.

The local associations are incorporated with the provision that the authorized capital stock be not more than $2,500. The par value of the shares has been placed at $10, and each member of the association must be a stockholder to the extent of at least one share. No member can hold more than 10 per cent of the stock of the association and dividends are restricted to 6 per cent.

In the crop contract between the local association and its members, each member agrees to loan to the association upon demand an amount equivalent to five cents for each spout driven the previous season upon the farm which he now occupies. In return for the loan, the association will issue certificates of indebtedness payable in five annual installments. This loan fund will be used by the local association to purchase the common stock of the central exchange.

The members of the local association, each of them being entitled to one vote irrespective of the amount of stock which he owns, elect their directors, who in turn will elect the officers of the association. The members of the local association will also elect a director to represent them upon the board of the central exchange.

The Vermont Maple Producers' Cooperative Exchange, Inc. (the central organization) is incorporated under that section of the Vermont law which makes provision for the incorporation of cooperative associations. The common stock of the exchange is owned by the local associations. The associations control absolutely the policy of the exchange and are thereby assured that it is operated for their benefit and the benefit of their members. Each director holds the proxy of the association which he represents and is entitled to one vote in all meetings of the exchange. The directors elect from among their own members an executive committee, which is charged with the supervision of the business of the exchange. The executive committee selects a manager, who has direct charge of the processing and marketing of the products.

A carefully directed plan of publicity is suggested in the report. Following organization a standard article must be secured by strict adherence to grade standards. With the establishment of grades, maintained and guaranteed by organized producers, it is possible to benefit by an advertising campaign. Only such marketing practices as are comparatively simple and possible of immediate adoption are recommended in the bulletin, with the idea that as the organized producers gain strength and experience their merchandising and business practices will undoubtedly develop through a process of evolution along substantial and sound lines.

United States Tea Importations

An increase of more than fifteen million pounds of tea examined at ports of entry into the United States was made during 1922, according to a report of the supervising tea examiner of the Bureau of Chemistry, United States Department of Agriculture. According to this report, the people of the United States are gradually shifting from the use of green teas to black or Oolong teas. The percentage of Japan tea importations from Japan has fallen off considerably during the past year, while that from China has increased steadily since 1919. In 1922 nearly 20 per cent of the tea imported came from China. Importations from the Dutch East Indies remain about the same. Exports of tea from the United States have more than doubled during the year, but they are still far behind the exportations of 1919 and 1920. These years were, however, abnormally high.

A total of 87,298,221 pounds was examined during the fiscal year 1922. Of this 1,620162 pounds or 1.85 per cent were rejected by the examiners. Of the total amount rejected 1,371,560 pounds, or 1.57 per cent, were rejected for quality and 248.602 pounds, or 0.28 per cent were rejected for impurities. The results obtained at eastern ports of examination showed an increase in the percentage of the total examinations, while the western ports and central ports have fallen off. This condition has been shown every year since the world war, owing to the fact that Atlantic transportation is gradually returning to normal, and more shipments are now coming via the Suez Canal and the Panama Canal.

Of the tea examined at Chicago 14 per cent was rejected by the examiner as being below the government standard in quality.

Trade Commission Complaint Involves Use of Name

In the complaint issued by the Federal Trade Commission against the Braden's California Products, Inc., and A. Claude Braden, there is presented an interesting problem in the simulation of trade names as applied to incorporated companies. The concern buys and sells jams, preserves, etc., and has its office in Pasadena, California.

According to the complaint, A. Claude Braden sold his stock in the Braden Preserving Company and later was instrumental in the organization of the Braden's California Products, Inc. This last named corporation through the medium of a sales organization, it is alleged, sold throughout the country its products in glass jars and cans bearing labels on which was prominently displayed the name of Braden's California Products, Inc.

Fishing for Sardines with Electricity

Sardine canneries along the Norwegian coast, which were recently threatened with a complete lack of raw material because shoals of bristling, sighted under water, could not be lured to the surface of the fjords, have solved the problem of reaching the fish by the use of electric lights, according to a report received by the Department of Commerce from George N. Ifft, American consul at Bergen. Searchlights, playing over the water, are bringing the bristling to the surface, says Mr. Ifft's report.

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Carnation Milk
"From Contented Cows"

Progress of the Powdered Milk Industry

(Continued from page 116)

an important one in the merchandising of this product. There is probably no other dairy product marketed which for proper protection demands the exacting requirements from a container demanded by milk powder.

Undoubtedly one of the big problems confronting the powdered milk industry is the question of keeping quality of those powders containing fat. It is impossible to state in general terms how long such a powder will keep after manufacture. There are many conditions determining this, but sufficient information has been gathered to warrant the belief that when this knowledge becomes fully utilized the length of time it will remain in good condition will be somewhat longer than is generally believed at present. A few years ago it was stated by a competent authority that three main factors were largely responsible for the slow development of the powdered milk industry: namely, poor keeping quality of the powders containing fat; general poor quality of all classes of powder then found on the market; a lack of knowledge among the general public regarding the merits of the product. Since that time, however, much progress has been made. The average quality of milk powder now available is much better than it was a few years ago; powders containing fat are being made and marketed in large quantities witih a high degree of success; and a wider knowledge concerning its use is creating a greater and more uniform demand, as well as opening new fields for the profitable utilization of more milk in food materials.

A Survey of Sugar Production

Cuba had only 8,500 tons of old-crop sugar on hand at the end of December, according to the report of the Foodstuffs Division of the Department of Commerce. A year ago her carryover of 1,200,000 tons was causing grave anxiety. This means that Cuba, which has had a record crop of 4,000,000 tons in 1922, has disposed of 5,200,000 tons.

The distribution was effected through the exportation of over 4,000,000 tons to the United States, some 850,000 tons of which (in terms of raw sugar) went to Europe after refining, and the shipment of another 850,000 tons to Europe direct. Thus Europe was supplied with 1,700,000 tons toward her deficit of 2,300,000 tons, most of the remainder coming from Java. The 3,000,000 tons of Cuban sugar that remained in this country, combined with the production of the United States and its possessions, was just about sufficient to supply the record United States consumption of nearly 5,500,000 tons (raw sugar).

Cuba's ability in 1922 to distribute both a record crop and a record carryover was thus due mainly to a record consumption in the United States and to a European crop that fell far short of the consumption needs of that continent. This year starts with another 4,000,000-ton Cuban crop in sight, a big crop in Java, and a greatly increased production in Europe. But various decreases elsewhere, notably in the United States, have brought the world production only 125,000 tons higher than it was last year, to supply consumption needs estimated at 350,000 tons more than in 1922 and 725,000 tons larger than production.

The following table shows the world's sugar production in 1921-22, with estimates for 1922-23, in terms of long tons of raw sugar:

Countries	1921-22 Tons	1922-23 Tons
America	8,018,000	7 417,000
Asia	5,245,000	5,386,000
Australasia	364,000	332,000
Africa	519,000	558 000
Europe	1,037,000	4,615,000
Total	18,183,000	18 308,000

Estimates for consumption in 1923 are necessarily rough and the figures given are somewhat conservative to allow for increases over last year in visible and invisible stocks and for unfavorable economic conditions in some countries. Thus the increase in world consumption in 1922 over 1921 was more than 16 per cent; the estimated increase in 1923 over 1922 is only 2 per cent.

European consumption of sugar in the pre-war years averaged about the same as its production. Both declined during and after the war period and both have greatly increased from 1920-21 to the present time. But while the consumption did not decline so sharply as the production, it has recovered to an even greater extent in the last two years and has reached the pre-war total (exclusive of Russia).

Data now available indicates that 1923 will see a decrease in Europe's import needs amounting to from 350,000 to 400,000 tons; but the United States' supplies will have to be supplemented by about the same amount in order to make up for the decrease in the domestic beet and cane crops.

New Arbitrary Weight Lists

A tenative weight list of canned products, prepared by a special committee appointed by the Joint Conference Committee of the National Wholesale Grocers' Association, has been distributed to members of the association and others with the request that criticisms and suggestions for revision be made on or before March 15. The latest list of arbitrary weights for labels of canned foods, to comply with the Food and Drugs Act, was printed in 1915. Since that time many new products have been packed, and the fills of some of the staple products have been changed, making necessary a re-checking of old weights to bring the list up to date. The revision committee, which consisted of Charles E. Wilcox, representing the wholesale grocers, and L. A. Sears, representing the canners, made its report to the Joint Confrence Committee at its meeting during the convention of the National Canners' Association in Atlantic City, in January.

Pickle Products Decrease

A decrease of 20.1 per cent from 1919 to 1921 in the value of products of establishments engaged primarily in the manufacture of pickles, preserves and sauces is shown in reports to the Bureau of the Census. An increase of 91.2 per cent, however, is shown for the period 1914 to 1921. In 1914 these products were valued at $20,915,000; in 1919 at $145,785,000; in 1921 at $116,464,000.

Of the 545 establishments reporting products valued at $5,000 and more in 1921, New York claimed 87; California 66; Illinois 48; Ohio 36; Pennsylvania 35; New Jersey 32; Massachusetts 30; Indiana 24; Michigan 19; Colorado 16; Maryland and Washington 15 each; Wisconsin 13; Texas 12; Lonisiana and Missouri 11 each; Kentucky and Minnesota 10 each; Iowa 9; Oregon 8; Florida 6; Virginia 5; Connecticut 4; Maine and Nebraska 3; Delaware, Kansas, Mississippi, North Dakota, Rhode Island and Utah, 2; Arizona, District of Columbia, Montana, North Carolina and West Virginia 1.

There was considerable fluctuation in the number of wage earners employed each month in this seasonal industry. In September, the month of maximum employment, 18,912 wage earners were reported, and in January, the month of minimum employment, 9,454, the minimum representing 50 per cent of the maximum. The average number of employed in 1921 was 12,885 as compared with 16,621 in 1919.

New Canned Milk Standards in England

New British standards governing the fat and solid contents of condensed and evaporated milk will affect British imports beginning August 1, 1923, according to an announcement of the British Minister of Health. The regulations require that tinned milk, both sweetened, condensed and evaporated, must be 9 per cent milk fat and contain total milk solids of 31 per cent. Another provision requires that skimmed condensed milk be labeled as unfit for infants.

New Zealand Increasing Butter Production

Large increases in the butter production of New Zealand are recorded in a dispatch received by the Department of Commerce from Consul MacVitty, Auckland, the total production to December 1 being 552,618 boxes as compared with 384,245 boxes for the corresponding period of last year. During November 255,964 boxes of butter and 15,300 crates of cheese were exported from Auckland, while the December allocations of shipping space provided for 324,735 boxes of butter and 30 350 crates of cheese.

United States Loses Australian Markets

American sales of flour in the Dutch East Indies have fallen to near the vanishing point, compared with the tremendous imports of flour from Australia, says a report from Parker W. Buhman, Consul at Soerabaya, just received by the Department of Commerce. The explanation given by the consul is the high freight rate from this country—more than double the Australian rate. Another reason is that apparently the best American grades are no longer sent to those markets. The Australian rate formerly about equaled the American rate, and has evidently been reduced for competitive reasons.

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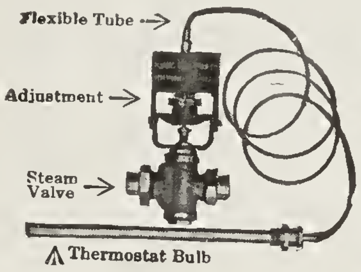

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Record Consumption of Meat for 1922

Bureau of Aninial Industry Figures Show Increase Over 1921 of Approximately Six Pounds Per Capita

A satisfactory condition of the home market is indicated by estimates of meat consumption in the United Sates for 1922, complied by the Bureau of Animal Industry of the United States Department of Agriculture. These figures show an increase over 1921 of approximately 6 pounds per capita, and 6 and one-half pounds more than in 1920. This increase is coupled with a decrease in the exports and somewhat higher prices to producers during the year.

According to the estimates, the average meat bill per person in 1922 was made up of 61.4 pounds of beef, 7.3 pounds of veal, 5 pounds of mutton and lamb, and 76 pounds of pork; total 149.7 pounds. This is the highest annual consumption since 1911 when the total was 158.4 pounds. The increase in 1922 over the preceding year applied to all classes of meat except mutton and lamb which showed decreases in both slaughter and consumption. The greatest increase was in beef, 3.6 pounds per head, while the increase in pork was only slightly less, 3.1 pounds per head. Veal increased only slightly, but consumption of mutton and lamb fell from 6.2 to an even 5 pounds per head.

Sixteen Billion Pounds of Beef Consumed in 1922

The vastness of the national meat industry is realized when these per capita quantities are applied to a population of 109,248,392, which is the census estimate for continental United States on July 1, 1922. The process of multiplication shows that the total consumption of meat in 1922 was over sixteen and one-third billion pounds, the highest in history for any country. However, slightly more meat was produced in the United States in 1918, the year of the great war effort, but the exceedingly large exports in that year reduced the consumption materially.

The meat totals are calculated by the use of average carcass weights for each of the class of animals slaughtered. The resulting totals represent dressed meat; lard which is estimated separately, and other edible fats are not included.

Production of Lard in 1922 Is Highest on Record

The conversion of corn into lard by means of the hog is one of the major industries of the country, the product of which goes to all parts of the world. The 67,050,745 hogs slaughtered in 1922 yielded over 9,000,000,000 pounds of meat and 2,333,000,000 pounds of lard. This is the highest production on record and as the exports, although considerable, were less than in 1921, it follows that the total consumption was also highest. The per capita consumption of 1922 was, however, exceeded in one year, 1916.

The adverse conditions of foreign exchange and the poorer purchasing power of European countries, especially, have seriously affected the exports of meat products. Foreign trade in beef has practically ceased, and while there has always been a large exportable surplus of pork products and lard, the trade in the former (mostly bacon and hams) has steadily diminished in the last four years. Lard alone, chiefly through the reentry of Germany as a large purchaser since the war, has held a commanding position in foreign trade.

Exports of lard were highest on record in 1921, totaling 893,000,000 pounds, and while they fell away over 100,000,000 pounds last year the total of 789,000,000 pounds in 1922 is, nevertheless, second highest. Britian is the chief customer for our lard, and Germany comes next.

Corn Products Association Formed

The American Corn Products Export Association, of New York City, has filed papers with the Federal Trade Commission under the Export Trade Act (Webb-Pomerene law) for the export of corn syrup, corn sugar and corn starch from the United States to foreign countries.

The members of the new association are the American Maize Products Company, New York City; Clinton Corn Syrup Refining Company, Clinton, Ia.; Huron Milling Company, Harbor Beach, Mich.; J. C. Hubinger Brothers Company, Keokuk, Iowa; Penick & Ford, Ltd., Inc., New York City; Union Starch and Refining Company, Edinburg, Ind.; A. E. Staley Manufacturing Company, Decatur, Ill.; Keever Starch Company, Columbus, Ohio.

C. D. Edinburg, 135 William Street, New York City, is secretary of the association.

Export trade associations formed under this act must engage solely in export trade. The act specifically exempts them from the operation of the anti-trust law in their export trade, but contains provision for the protection of domestic trade.

Recent Patents

The following patents of interest to readers of The American Food Journal have been issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of twenty cents each. State number of patent and name of inventor when ordering.

1,442,820. Ice-cream packing machine. Harland L. Percy, Denver, Colo., assignor to Percy Manufacturing Company, same place.

1,442,945. Method for producing ice cream. Edwin Hauk, Chicago.

1,443,053. Ice-cream container. Lee Sturges, Chicago, Ill., assignor to Solar-Sturges Manufacturing Company.

1,443,062. Ice-cream tub. William Whitsel, Oskaloosa, Ia.

1,443,180. Food composition. Lawrence J. Henderson, Cambridge, Mass.

1,443,207. Container for cakes, crackers, and the like. Frank R. Blount, Punta Gorda, Fla.

1,443,367. Apparatus for dehydrating fruit, vegetables, and other materials. Joseph E. Kennedy, New York.

1,443,458. Food product and method of manufacturing. William J. Bruce, New York.

1,443,528. Process of treating whey. Henry V. Dunham, Mount Vernon, N. Y.

1,443,621. Fruit-pitting machine. Zack T. Fowler, San Jose, Cal.

1,443,926. Apparatus for grinding or mixing cacao, chocolate, and the like. Carl Postranecky, Dresden, Germany.

1,444,041. Machine for making doughnuts or other bakery products. John H. Schulz and William E. Krause, Milwaukee, Wis., assignors to Universal Bakery Equipment Company, same place.

1,444,050. Packaging brick ice cream. Wilbur L. Wright, Fulton, N. Y., assignor to Sealright Company, same place.

1,444,064. Sausauge-stuffer. Edward F. Deacon, St. Louis, Mo., assignor to Gus V. Brecht Butchers' Supply Company, same place.

1,444,178. Method for commercially obtaining water-soluble milk albumen and milk sugar. Adolph D. Fest, Chicago, Ill.

1,444,386. Method of peeling fruit. Harry T. Pyle, San Jose, Cal.

1,444,408. Process of preparing and preserving cocoanut meats and products obtained thereby. Walter W. Willison, Brooklyn, N. Y., assignor to Thermokept Products Corporation, New York.

1,444,528. Process and apparatus for treating cereals. John J. Schreiber, Minneapolis, Minn.

1,444,535. Machine for removing meat from pineapple shells. Clarence E. Barter, Honolulu, Hawaii, assignor to California Packing Corporation, San Francisco, Cal.

1,444,562. Butter substitute. John C. Sherman, Portland, Me., assignor to Brown Company, same place.

1,444,812. Process of making vegetable milk. Gaston D. Thevenot, New York.

1,445,011. Macaroni-drier. Mark E. Fontana, San Francisco, Cal.

1,445,174. Peanut-butter and process of manufacturing the same. Joseph L. Rosenfield, Alameda, Cal.

1,445,187. Process of producing a frozen confection. Earney B. Vaughan, Long Beach, Cal.

1,445,200. Formula for a confection. Otto W. and Frank C. Bullard, Sheridan, Wyo.

1,445,434. Composition of ingredients for artificial food. Henry J. Gerstenberger, Cleveland, Ohio, assignor to Babies Dispensary and Hospital, same place.

1,445,550. Confection-coating machine. George S. Perkins, Springfield, Mass., assignor to National Equipment Company, same place.

Young, experienced food chemist desires connection with a food concern offering opportunities for advancement. Am not afraid of hard work if promotion is assured. Graduate well known eastern university, considerable business experience. Several years' experience in the enforcement of food laws in U. S. Best references. Reasonable salary. Address Chemist, care of American Food Journal, 342 Madison Ave., New York City.

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What the Coffee Industry Has Accomplished

Scientific Research Plays an Important Part in Making Coffee the Third in Value of American Imports

By WINIFRED STUART GIBBS

Feeding a rabbit dry coffee and sugar in the Laboratory of Professor Prescott at Massachusetts Institute of Technology

THE coffee industry might almost lay claim to that much coveted distinction of having "come over in the Mayflower," since it was well within the memory of many of the Mayflower's passengers, in 1670 to be exact, that the American trade in coffee was started by Dorothy Jones of Boston.

From that day the industry played an appreciable part in establishing the commerce of the new world. Thirteen years later William Penn was buying his supplies of green coffee in the New York market, coffee that was to retail at $4.68 per pound. Still later the practical-minded Benjamin Franklin sold coffee as a side line while following his original trade of printing.

The period just before the Revolutionary War saw the rise of those places of friendly foregathering, the coffee houses. Every one is more or less familiar with the numerous allusions to these places, both in English and American literature, and there is little doubt that coffee itself has been a determining force in developing literature as well as commerce.

Lest we should think that our present day is unusually cursed by the problems of profiteering, suppose we turn to the records of the coffee industry for 1777. We read that at that time "profiteering was rampant among the colonists" and it was "impossible to purchase coffee without claret and other goods." Continuing, we find that "females staged a 'coffee party' on the lines of the Boston Tea Party, personally chastising a profiteer and confiscating some of his stock." This incident was in a letter from Abigail Adams to her husband.

What is thought to be the first wholesale coffee-roasting plant in America, says William H. Ukers, in his book, "All About Coffee," (see The American Food Journal for December, 1922, page 28), was begun at No. 4 Great Dock Street, now Pearl Street, New York, in 1790. During that same year, says Mr. Ukers, "The first coffee advertisement appeared in the New York Daily Advertiser, setting forth the advantages of 'a second coffee manufactory.'"

Import duty increased at this time to four cents a pound, reaching the high-water mark of five cents in 1794. From that date patents and developments were numerous.

During an extended period New York was the only important port for the entrance of coffee, New Orleans and San Francisco being next in order, followed by Philadelphia. It is interesting to note that in 1900 there were ninety-nine firms importing green coffee. At this time there were, besides the roasters in New York, six in Philadelphia, twenty-eight in San Francisco, and twelve in New Orleans. The year 1920 found two hundred and sixteen firms in New York, thirty-one in San Francisco, and fifteen in New Orleans.

Going back to pick up the significant dates in the development of the industry, 1881 stands out as the year when the New York Coffee Exchange was opened, this being the first green coffee trade organization in the world. and also the Havre Coffee Terminal Market, which stood alone in the field for the ensuing five years. Another banner year was 1887 for it saw the beginning of trade organizations in Amsterdam and Hamburg. London, Antwerp and Rotterdam joined the movement three years later. The present Coffee Trade Association of London, an outgrowth of the early organization, was not formed until 1916.

So much for the importers.

During their convention at St. Louis in 1885, the roasters had made a gentlemen's agreement not to cut the price of roasting green coffee. Vigorous competition had caused a decline from one dollar to ten cents a bag. Each member of the conference posted a check for five hundred dollars as a guarantee. Some years later one check was cashed and the agreement was dissolved.

Felix Coste
Manager of the National Coffee Roasters' Association

Later St. Louis again became the scene of important developments in the organization of roasters. It was in that city in 1900 that the forerunner of the National Coffee Roasters' Traffic and Pure Food Association, now the National Coffee Roasters' Association, was formed.

The coffee berries after they are picked are spread out in the sun to dry and then put through machines which remove the shriveled pulp and other coverings, and leave the beans cleaned and ready for shipping

On some plantations the berries undergo a process of washing which floats off the imperfect fruit and softens the pulp and outer covering. They are then put through a "pulping" machine and dried. Other machines remove the inner "parchment" and "silver skin"

The objects of organization were stated as follows:

First, to foster and promote a feeling of fellowship and good will among members and on broad and equitable lines to advance the welfare of the coffee trade and the consumer.

Second, to eliminate or minimize abuses, methods, and practices inimical to the proper conduct of business.

Third, to assist in the enactment and enforcement of uniform pure food laws which in their operations shall deal justly and equitably with the rights of the consumer and the trade.

The organization consists of about three hundred wholesale distributors of roasted coffee, doing business in every state and representing 75 per cent of the roasted coffee sales in the country. Standing committees on finance, legislation, traffic, publicity, pure food, membership and any other subjects may, from time to time, be authorized by the executive committee. The membership fee is $25. The annual dues are $30, $60, or $120, depending upon the capital or annual output of the firm.

Among the association's activities are the following:

Cooperation with the growers of Sao Paulo, Brazil, and the green coffee trade of the United States in a national advertising campaign to promote greater coffee consumption.

Cooperation in scientific research to learn all the facts about coffee.

Promotion of truth in coffee advertising.

Agitation for trade reforms and better business ethics.

Correction of unfair methods of competition and trade abuses generally.

Study of distribution problems and the betterment of the retailer.

Survey of cost items—roasting, overhead, selling.

Preparation and issuance for aid of members of a scientific cost finding system.

Seeking greater economies in selling costs.

Encouraging sound banking and credit policies and better credit methods.

Pointing out advantages of short selling terms.

Information on federal and state legislation, the latest decisions and rulings of federal departments and commissions.

Cooperation with federal and state authorities to enforce pure food laws.

A traffic department which handles shipments from New York City to any interior point, furnishes information without charge on all traffic matters, aids in collecting transportation claims, etc.

Reduction of port and trucking charges.

Promotion of American shipping.

Bulletins, averaging once a week, giving members the vital news of the trade.

An annual convention which brings together the leaders of the coffee trade from all parts of the country.

An entire article might be devoted to interesting notes on outstanding personalities that have helped to make the coffee industry a strong factor in American commerce. Benjamin Green Arnold was known as the "first Coffee King," John Arbuckle as the "dean of the coffee trade," a title which he held for fifty years.

These men and their associates studied roasting and packaging methods and devoted themselves to the development of the industry as a unit.

Roasting by Machinery

The value of organization once established, the next important step was that of adopting improved mechanical devices for roasting.

Prior to the Civil War the use of any available roaster involved removing the pan, globe or cylinder from the fire. For twenty years, Jabez Burns studied this problem, evolving finally the machine destined to revolutionize the coffee business of the United States. Mr. Burns was possessed of a prophetic vision and saw the home roasting of coffee declining slowly but surely. His conviction that coffee could be roasted in a very simple machine, even a corn popper, led to his successful design for the roaster that now bears his name.

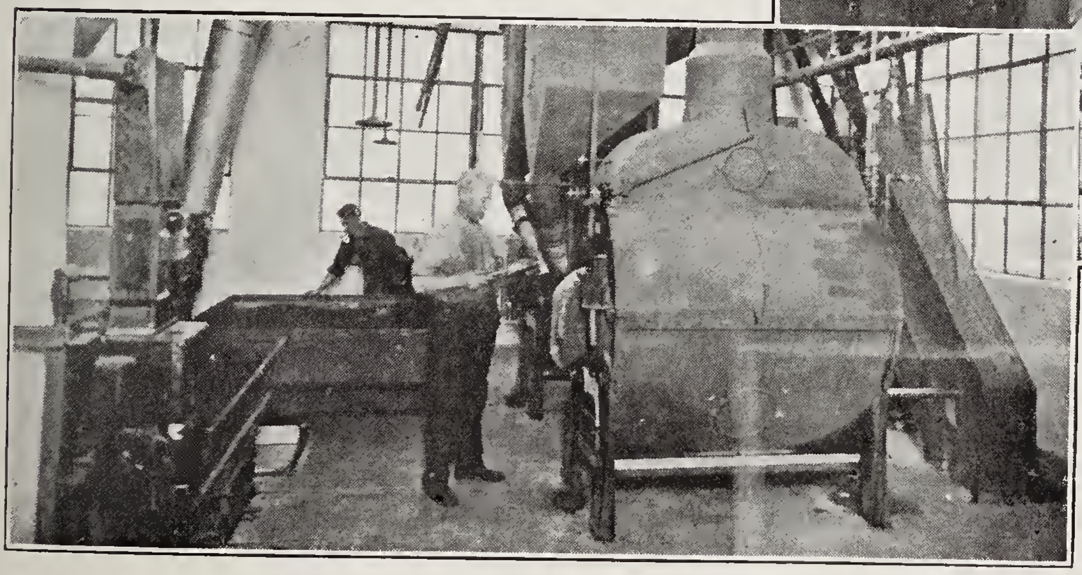
The Burns roaster controls the discharge of the coffee from the end of the machine at pleasure of the operator, while the cylinder is still in motion; at the same time it causes the coffee to be equally distributed from end to end of the cylinder. A double screw and a double right and left augur, one within the other, are also features of this roaster. The double augur is firmly fastened together as well as to the shell or cylinder, so that when the cylinder revolves the desired result is easily obtained.

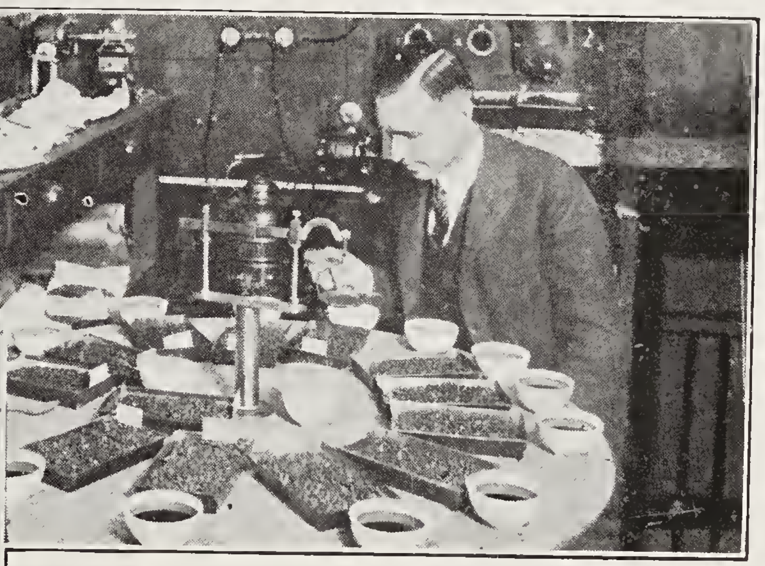
Until the Burns machine appeared coffee roasters usually consisted of cylinders revolving upon an axis. Jabez Burns rose to be a trade teacher and a trade builder. Various improvements and patents on the roaster were perfected and today the business is carried on by the sons of the founder.

The Crowning Achievement

Solidly organized and equipped with the most efficient apparatus for carrying on its work, the National Coffee Roasters' Association found that its sales did not measure up to its own standards. What was to be done?

After the green coffee receives another cleaning, it is roasted in revolving perforated cylinders over a hot fire to develop the aromatic oils which determine the characteristic flavor, and then dumped into perforated coolers





Here samples of the green coffee are being graded, roasted in the sample roaster, ground fine in the electric mill, and "drawn" in the cup. The taster places each cup on a round revolving table opposite its sample of roasted beans, and tests by both smell and taste

"Advertise," said one member. "Send out publicity men," said another. "Increase capital," still a third.

"We've done all those things," answered the managers of the association, "and yet the sales are not what they should be."

Finally the real answer was given. "Make a systematic, scientific study of the cause of the trouble, get the best advice in the country as to the remedy and then go to it."

So this is what the association finally did.

The results are worth the telling and hearing, carrying as the story does suggestions for any live food trade, no matter what the product.

The Joint Coffee Trade Publicity Committee, cooperating with the National Coffee Roasters' Association, was instrumental in making the trade realize that the crying need was for consumer education. This realization and the team work resulting therefrom went far toward unifying the entire trade.

"Every housewife thinks she can make coffee," said the committee, "but honor bright, how many do you know who really deliver the goods? Isn't our first service to the trade to find out the very best method of making coffee and to pass on the knowledge to as many households as possible?"

The authority selected to ascertain the best scientific method for making coffee so as to retain the aroma and flavor and at the same time minimize the effect on the nervous system was Professor Samuel C. Prescott, head of the Department of Biology and Public Health of the Massachusetts Institute of Technology.

Studying the Physical Effects

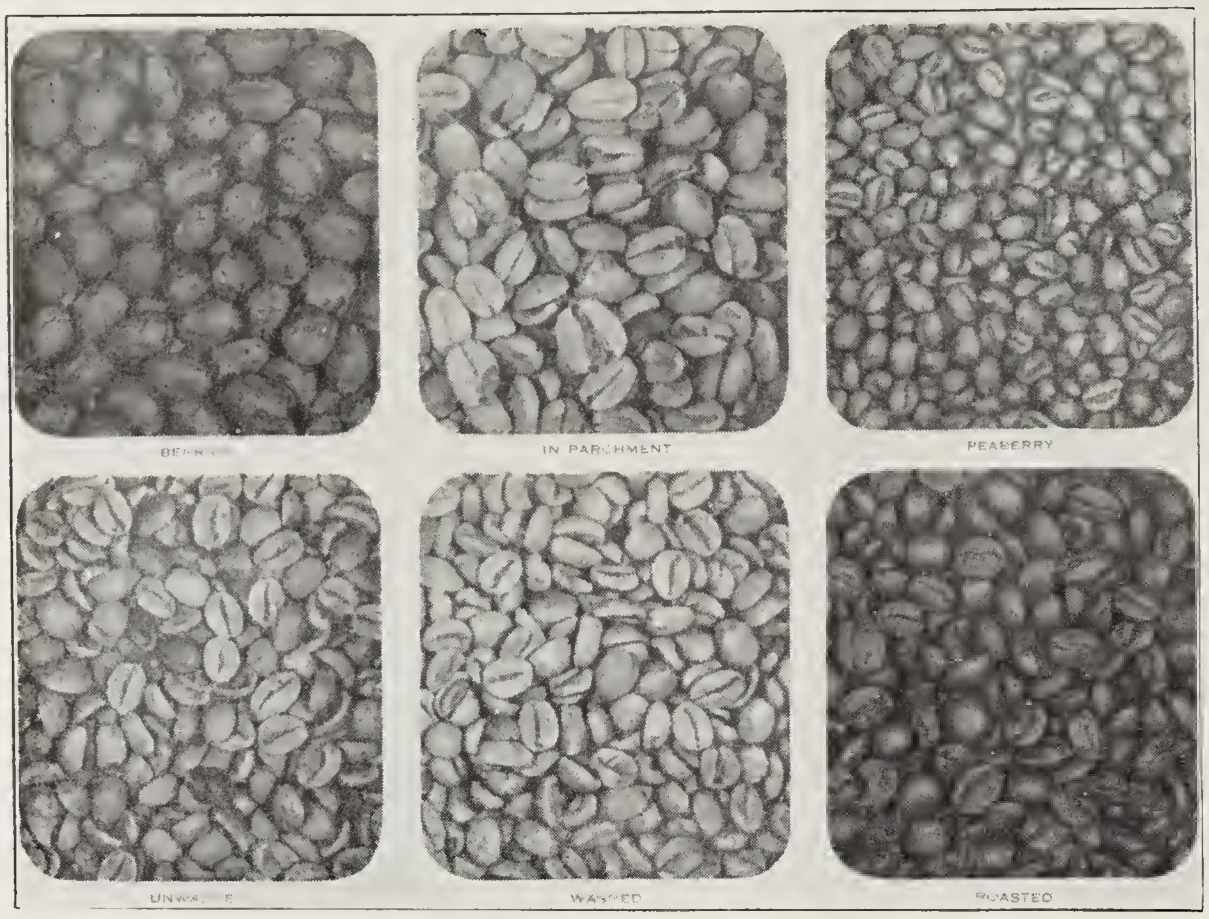
A study of the literature of coffee revealed to Professor Prescott and his co-workers that, aside from methods for the detection of adulterations, little had been done to determine the effects of its use on the consumer. They immediately proceeded to a study of caffein, as the most characteristic principle occurring in coffee, and soon established a method for the accurate estimate of this ingredient. This was followed by the study of the effects of the beverage.

Briefly summarized, the investigations of Professor Prescott indicate that caffein may be taken by the vast majority of healthy adults without subsequent narcotic or depressant effect, provided it is used in moderation and not abused. Excessive amounts incite disturbances in the central nervous system temporarily. It is equally true, as Professor Prescott points out, that other normally harmless substances such as salt, sugar or condiments may also produce untoward symptoms which are often severe.

Allan P. Ames
Publicity Director, Joint Coffee Trades Publicity Committee

Professor Prescott, in a report of his investigations, says:

Fully a third of the articles dealing



Coffee during the different stages of the production process

with coffee or caffein describe either specific or general effects of caffein on the human body or when administered. The consensus of opinion is that caffein acts on the nervous system as an effective stimulant, exerting its chief influence on the brain and spinal cord. By its cerebral effect it causes increased rapidity of thought, and by its influence on the spinal cord it increases reflex activity and for this reason it is said to make people "nervous." If used to excess to stimulate brain activity, as by taking large and repeated doses, its effect is ultimately injurious. In the action on the circulation of the blood it seems to tend to raise the blood pressure and to increase the heart beat, especially at first, but this is said to be followed by a slowing of the heart's action and a more forcible contraction of the muscular walls of the blood vessels. In its effect on the kidneys, on tissue waste and elimination, it increases diuresis and exerts a stimulating influence on the secretory epithelium of the kidney.

Some authors claim that it acts as a depressant to tissue waste, while others disagree on this point. Psychologically it produces a feeling of well being and of increased strength and vigor, and removes the sense of fatigue. As has already been stated for coffee, excessive use of caffein, or caffein when introduced into the body in large or repeated doses, can give rise to a great variety of phenomena with different individuals, to the extent of producing tremors, palpitation, insomnia and even delirium. The literature abounds with articles describing individual cases and experiments carried out upon test animals. Most of the articles are of such medical character that any extended summary of them would be unintelligible to the lay reader, and therefore uninteresting. On the whole, however, the subject may be summarized by saying that caffein is one of the most useful stimulants known because of the immediate action which is obtained with relatively small quantities and the fact that its reasonable use is not followed by narcotic or depressant effects. Like all stimulants, overdoses produce undesirable effects and these differ with different individuals.

"Coffee With a College Education"

The development of the coffee trade as a whole falls naturally into certain broad divisions. We have considered those of organization and scientific research. Obviously it was necessary to devise ways and means for broadcasting the results of all these activities.

Not all members of the trade were "sold" in the matter of "coffee with a college education" as they called the Institute of Technology project. The story of their winning over and subsequent enthusiastic cooperation is one of the triumphs of scientific research in industry. Food manufacturers, no matter what their product, may well take counsel.

The accompanying chart shows how the campaign was carried out.

Literature

Besides the national display advertising put out by the committee the coffee industry is represented by several trade journals. One of these, "The Tea and Coffee Trade Journal," is edited by Mr. Ukers, whose book, mentioned on a foregoing page, is probably the most comprehensive ever published on the subject of a single food project.

The Joint Coffee Trade Publicity Committee also issues a series of attractive booklets and an excellent exhibit which is listed in The American Food Journal's service to teachers (see the department Food and Health Education).

Summary

Today both trade organization and trade educational work are "going strong." The commercial aspects of the situation may be described by the following summary for 1921, the increase for 1922 being at approximately the same rate.

The value of coffee imports during 1921 was $142,809,000.

Coffee ranks third in value among our imports. It is exceeded only by raw pork and cane sugar.

Imports during 1921 were divided according to source as follows:

Brazil	839,212,388 pounds
Columbia	87,176,477 pounds
Venezuela	59,783,303 pounds
Central America	118,607,382 pounds
Mexico	26,895,034 pounds
West Indies	15,398,073 pounds
Aden and Dutch East Indies	2,799,824 pounds

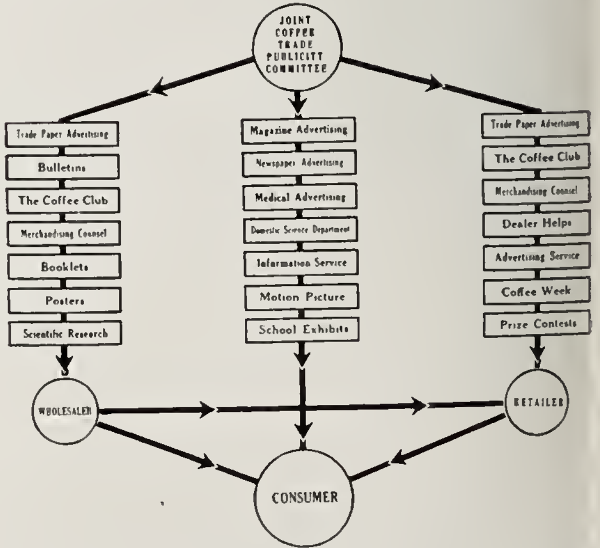
Imports of coffee by the principal countries in 1909 and again in 1921 were as follows:

Country	1909-13 5-yr. aver (in millions of pounds)	1921
U. S. (continental)	901	1,304
Germany	398	148
France	216	243
Netherlands	91	48
United Kingdom	24	1
Belgium	78	73
Sweden	74	80
Italy	58	55

Figures on the per capita consumption of European countries are hard to obtain and inaccurate. Speaking generally, consumption before the war in Germany, Holland and the Scandinavian countries exceeded consumption in the United States. What it has been since the war, we do not know. Import figures are not conclusive because a large part of the coffee imported by the European countries, especially by Holland, was re-exported.

Consumption of coffee in the British Isles averages less than one pound per capita.

While the consumption of coffee has steadily increased, the consumption of tea in the United States has decreased during the past forty years from an average of one and one-third pounds per capita between 1870 and 1895 to an average of about three-quarters of a pound during 1920 and 1921, according to figures of the Department of Commerce.



The coffee campaign as it finally crystallized

What Is the Matter With Dehydration?

Industry Which Started Out with Such Promise Is Making Slow Strides But Future Seems Bright

By W. D. FARNUM
President Wisconsin Dehydrating Company, Milwaukee, Wisconsin

THOSE who were particularly struck a year or so ago with the bright prospects of the dehydration industry and have not beheld their predictions immediately realized, often ask, "What is the matter with dehydration?" That such a promising method of food preservation should not be universally adopted and the resultant product found in everyday household use throughout the land has led to the suspicion that perhaps the industry or the product was not what it seemed to be.

Much unsound enthusiasm was undoubtedly aroused in the beginning. The idea was new and novel. Here one could take a vegetable, cut it up, and by a more or less simple process extract the moisture in such a way as to keep all of the flavor and food value intact. Upon soaking the slices a short time in water—lo and behold, they took back the extracted water and became just as before! Cooking and tasting showed that they had undergone no change and could not be told from the fresh, undried vegetable. It was wonderful. The process was inexpensive and the dried vegetable restored in water was superior in taste and appearance to the canned vegetable. Here, certainly, was something with brilliant possibilities. Visions arose of an eager world beating paths to the door to buy the product.

"Boon" Period of the Industry

This enthusiasm led into two channels: one an effort to devise and patent some device by which this dehydration could be carried out and millions collected from the naturally ensuing royalties; the other to promote, to raise large sums of money to exploit the idea. Both channels were eagerly followed. Many devices were drawn out on paper and duly patented—and still are. Much money was raised—and was consumed in expenses. Much talk was indulged in but no products were turned out. The idea was fundamentally right and sound—and still is—but the fact that some of these first ventures did not turn out to be the successes their promoters promised, together with the fact that other development was apparently slow, raised the question as to what, after all, was the matter with dehydration.

A glance at the industry and its history will give a better picture of what is going on.

"Dehydration," meaning "taking out water," is used to designate the modern process by which the water is extracted from any food product without damage to the cellular structure or loss of flavor or food value. Besides the drying of vegetables and fruits the term includes the process by which powdered milk and many other dried products are produced, but for the purposes of this article its meaning is taken as applied to the drying of vegetables and fruits only. Vegetables, for example, are mostly water—80 to 95 per cent. The bacterial action that causes decay can go on only when water is present. Remove the water and decay stops. If the products are kept away from moisture that might be reabsorbed no decay or deterioration can take place.

Fruits and vegetables are composed of tiny balloon-like cells filled with water and surrounded by a network of delicate fibre or tissue with connecting tubes from one cell to another. If the water can be coaxed out of these elastic little cells without damaging them or the surrounding fibre they will retain their elasticity and take all the water back again at the first opportunity. When this is done only the water itself comes out and the flavor stays just as it was without change. This is what the modern dehydrating process means, and it is entirely different from the evaporating process.

Evaporating Process Affects Flavor

The evaporating process is also a means of taking out the water but the method is so different that not only are the delicate fibres damaged but certain changes are caused which affect both the flavor and the food value. This accounts for the toughness or flatness of evaporated products when used. They have a flavor all their own which is distinct from the fresh flavor of the product from which they were produced. This difference between evaporation and dehydration is little understood by the general public and the terms are sometimes confused. Dehydration is not merely an improvement over evaporation. The difference is greater than that and the process may be looked upon as new and distinct in itself.

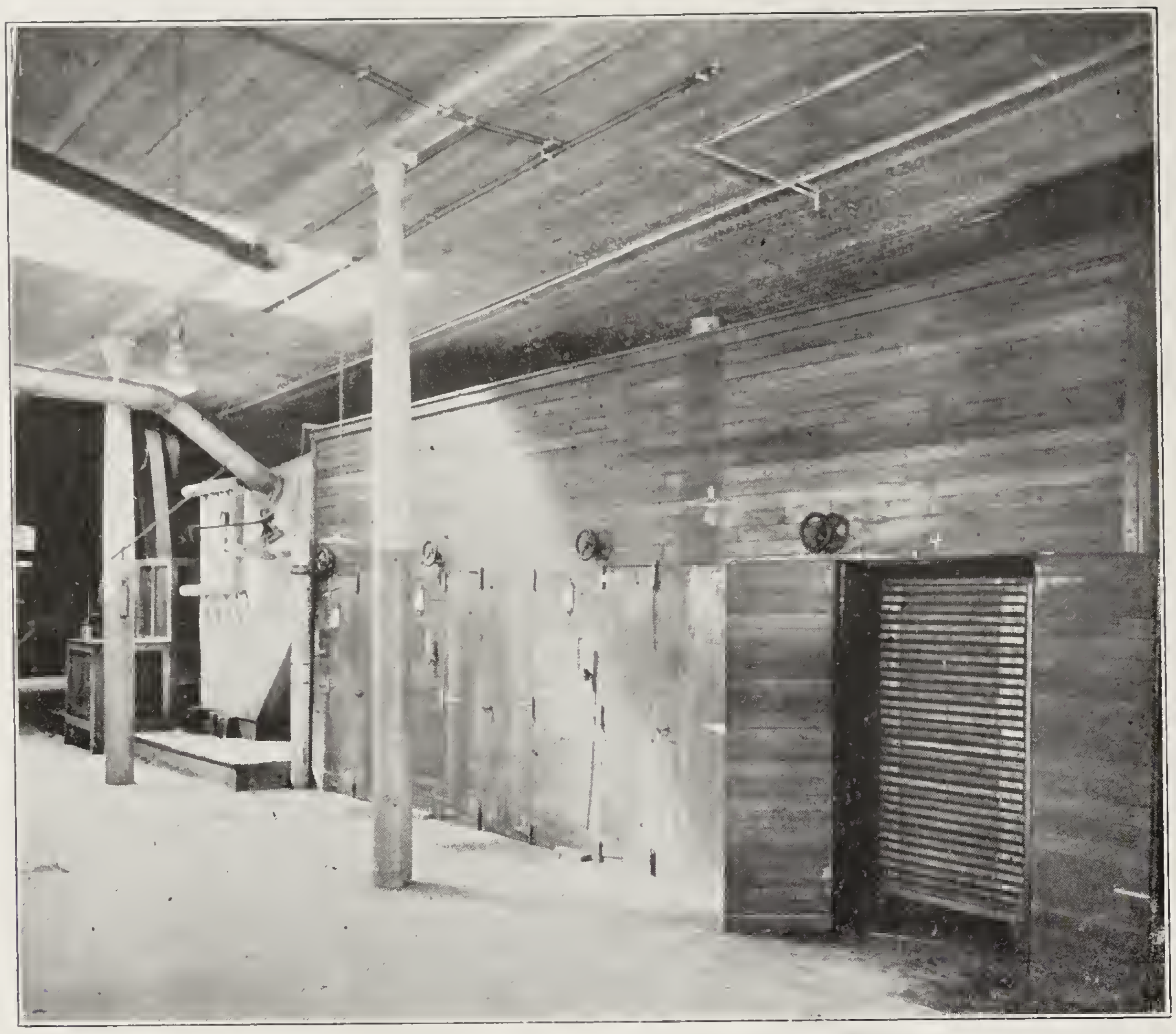
The process of dehydration itself employs heat or heated air with moisture or humidity in the air to prevent damage to the cellular structure and a forced draft to take away the moisture. The products are prepared for the drying and spread upon trays or screens. They are then placed in the drier and subjected to proper heat or heated air with a predetermined amount of humidity forced over and through the products. The heat and humidity are very carefully controlled and varied as the drying progresses. The result is that the water vapor or moisture comes out very quickly and is carried away by the constantly changing air without damage in any way to the product.

Process Discovered in Germany

The process is said to have been first discovered by accident in Germany over twenty years ago. An evaporating plant turning out evaporated potatoes by chance was located in an old steel plant having a tall stack or chimney. In order to get rid of some of the vapor the idea was conceived of connecting the drier with the stack. This caused a good forced draft and the drying was done in less than half the time. It had already been found that the higher the heat the quicker the drying, but beyond a certain comparatively low temperature the heat spoiled the product. After a while some one noticed that on damp or rainy days, using the chimney draft, still higher heat did no damage at all and the drying time was still further shortened. Carrying this experiment further it was found that by using a forced draft of air with higher temperature and having the air moist, drying could be done in a fraction of the time taken by the evaporating process. The surprising thing was that the dried product was entirely different—it was like the fresh product in taste.

This discovery was the foundation of the dehydrating industry. The suction draft of the old chimney has given way to power-driven fans and the moist air is supplied in all weather conditions by humidifiers or air-moistening apparatus.

There is nothing particularly secret or mysterious about the dehydrating process, in spite of the smoke screen of secrecy that is thrown around it by some who have patent apparatus to



Dehydrating compartments in a modern plant

sell. It is simply the application of heat and moist air properly controlled. There are certain known laws that govern this process as all other processes. Many different patent processes and apparatus have been devised for this dehydration. Most of them are elaborate and some are absurd. Few show any kind regard for the few natural laws that govern drying. But the joke of it is that practically all of them will work and within certain limitations will produce dehydrated products. That they are inefficient or not practical on a commercial scale is nothing to the inventors. The fact that they work at all is a good point in favor of the industry as a whole. The simple process of dehydration is not patentable and the simpler the apparatus the better the result — all of which is fortunate for those who are producing and not spending their time inventing.

Preparation of Product Very Important

In the excitement of inventing apparatus to dehydrate, most people lose sight of the fact that the preparation of the vegetables and fruits before drying is as important as the drying itself. For various reasons the drying of vegetables raw without processing is impractical. While no chemicals or preservatives of any kind are used it is necessary to treat with steam under pressure properly to prepare the fibre for drying. This requires only experience and care. Most of the preparation machinery used is of the standard cannery type already on the market and merely adapted to this new industry.

The thing that counts in dehydration, both in the preparation of the products to be dried and the drying itself, is experience. And there is no short cut to experience. It takes more than one year to get this experience, and that is the reason of the many failures. It is not an industry for a beginner to experiment in unless he is prepared to spend several years at it.

Nobody can claim any originality in the idea of preserving foods by drying. That has been done for a great many centuries. The early Egyptians had the process down to a fine state of perfection. Some of the products dried six thousand years ago have been discovered to be in a perfect state of preservation and quite edible—a liberal margin of time over that necessary to keep and market any product these days. The old evaporation process has been used throughout all ages for some products. Our early settlers preserved most of their vegetables in that way. In fact, up to the time of the Civil War it was the only method known. This primitive evaporation process was unsatisfactory at best and in the sixties or seventies was more or less supplanted by the canning process. It is still, however, used extensively for fruits. The canning process was an improvement over the old evaporating process and within a short time overshadowed and then supplanted it, just as the new process may supplant the canning.

The first dehydrating in this country was done in 1910, the process having been in commercial use in Germany for some years previous. The first products turned out were poor in quality but the soundness of the principle was recognized, and with experience the quality improved. The World War and its demand for foodstuffs of all kinds gave the industry a big boost, just as the Civil War had boosted the canning industry. Many new factories came into existence and thousands of tons of dehydrated vegetables were supplied and shipped overseas. Meanwhile, in Germany, with a start of three plants in operation in 1898, the industry had prospered and grown rapidly, until in 1914 there were 488 plants. In 1916 there were 841 and in 1917 there were over 1,900. At the present time there are estimated to be approximately 4,000 dehydration plants in active operation there, to the almost total eclipse of the canning industry.

Progress of the Industry in America

Less than thirty plants are in operation at the present time in this country. At the same rate of expansion we should have 500 in 1926 and 4,000 in 1935. The product which is turned out in this country, by the way, is generally far superior to anything produced in Germany at the present time.

The development of the industry in France has also been rapid. There are many excellent plants in operation, any one of which outclasses anything in this country in size and production. The quality of the French products is generally good and a considerable amount is now being imported into this country. Holland, Denmark and England have made much progress with dehydration and the products have already become staple articles of food.

If there is anything wrong with the dehydrating industry in this country it cannot be laid to the product being economically unsound. The dehydrated foods have much in their favor. The flavor is excellent; in fact, when restored and cooked they cannot be distinguished from the undried. The same is true of the appearance. Canned goods undergo some change of flavor in the canning process. Dehydrated foods do not. There is a saving in weight that amounts to almost nine-tenths of the original weight. They take up one-fourth the space. They are convenient to use. They do not require separate soaking but are prepared for the table in the same length of time it takes to cook fresh vegetables or fruits. And, above all, they can be produced at approximately one-half of the cost of canned products for the same amount of food. The newer studies of vitamines have shown that properly dehydrated foods lose little or nothing of their vitamine content. The heat is not such as to destroy these properties and the loss of moisture prevents the destruction of the vitamines by oxidation.

What then is wrong with the dehydrating industry and why are not the products in use in every household throughout the country?

The chief answer is that the process is brand new. It is just getting under way. It is estimated that nine out of ten do not even know what the word "dehydration" means, must less know the advantages of the product. Only a few plants so far have made a serious attempt to market their products in a commercial way. Those who have are making headway that is little appreciated by the general public. Figures show that the total sales of dehydrated products in 1915 were less than $50,000. In 1921 sales were $3,810,000 and in 1922 they were estimated to be approximately $5,000,000. This is progress, but a few million dollars' worth of dehydrated products spread among 110,000,000 people cannot more than scratch the surface.

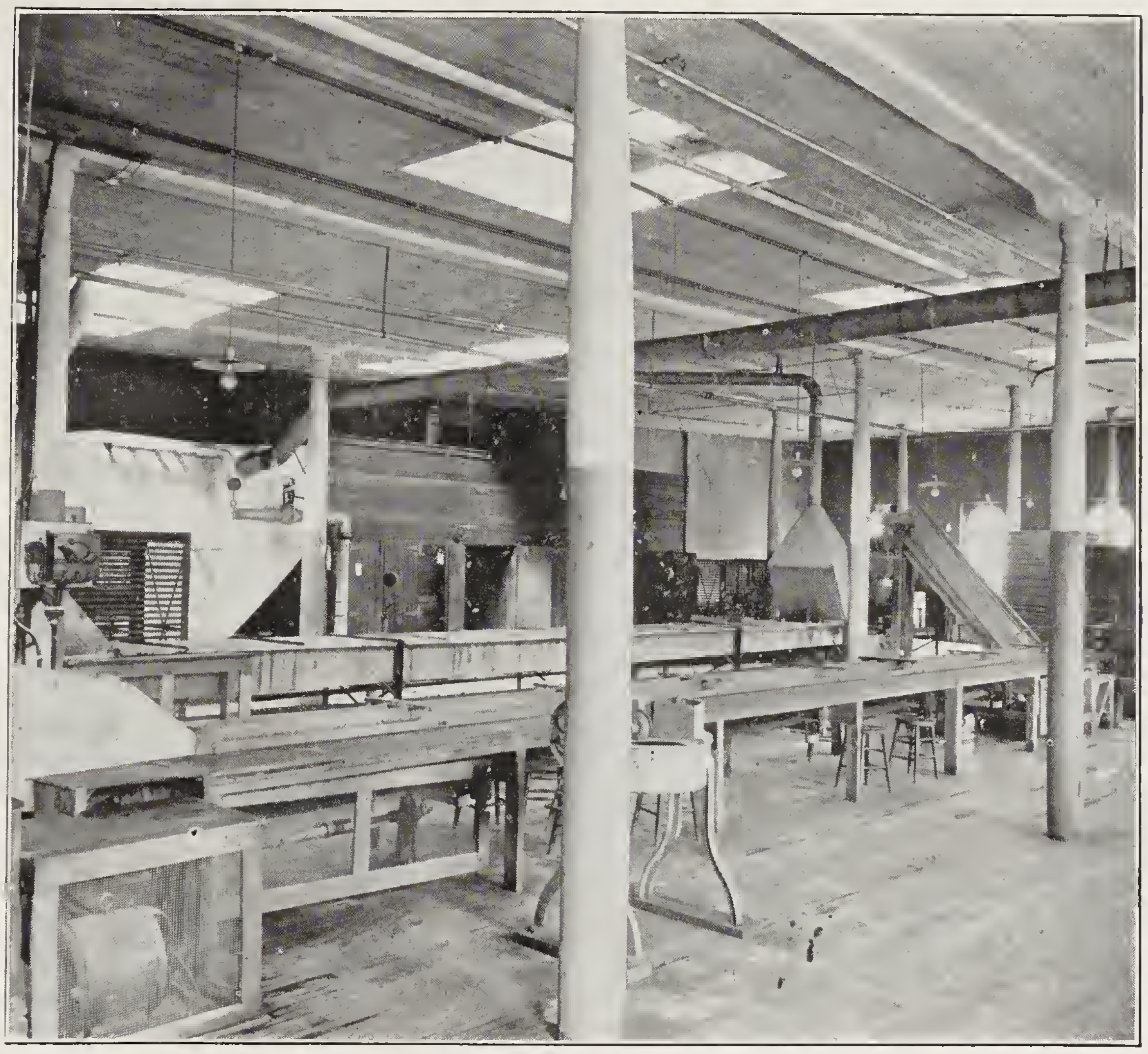
Building Up the Demand

The creating of a market for these products in the face of almost total ignorance on the part of the public as to what was offered was considerable of a problem at first. The public feels no antagonism to dehydrated products; in fact, there is general curiosity and wonder, with willingness to be convinced. As the idea becomes known the demand grows with astonishing rapidity. While some effort has been made to educate the housewife to the advantages of dehydrated foods, much more rapid progress has been made with the large users of foodstuffs, such as restaurants, institutions, hospitals and bakers. These people are on the lookout for new and better foods and are in a good position to figure economies. Progress with the household trade will be slower unless extensive educational advertising is indulged in. Some products which have proved to be more acceptable to the public than the rest are already in such demand that they have outstripped the production facilities of the plants producing them.

Any new industry with promise is an easy field for promoters without experience. Many dehydration plants have not lasted beyond the first year, having usually come to the end of their financial resources before a market was secured. These and some other ignorant or careless manufacturers have sometimes put on the market products of very poor quality. Many other ills and infantile diseases that are common to infant industries have also tended to slow up the development, but even a prejudiced observer of this history could not find anything that would especially detract from the fundamental soundness of dehydration nor particularly dim its prospects for the future.

Every so often in history some new industry which is fundamental in its particular field comes along and more or less revolutionizes the thoughts, actions or habits of the people. The automobile industry is an example. The aircraft and wireless industries are others. The food line has had its canning industry and its prepared cereal industry. All have started from an idea and developed rapidly. It would seem that the dehydrating industry is, in its importance, similar to these.

There is no doubt that the idea is sound. The United States Department of Agriculture has endorsed it in the strongest manner. A Division of Dehydration is doing active research work as a department of the Bureau of Chemistry. The stand is taken that the development of this industry is a public benefit both for the farmer who raises the crops and the city dweller who must eat.



One floor of a modern compartment drier

Dr. Wiley, the eminent food authority, has publicly endorsed the process on many occasions. In speaking before the National Canners' convention at Atlantic City in 1921 he prophesied that within five years dehydration would seriously affect the canners' business. Professor Prescott, of the Massachusetts Institute of Technology, who has done exhaustive research work with dehydration, is quoted in "The Annals of the American Academy" as follows: "There seems no reason to doubt that a demand will be created and dehydration will become, as canning has, a great industry of immense importance." Innumerable authorities could be quoted on this subject to the same effect.

Dehydrated Products in Use

The proof of the pudding, however, is in the eating. To see how the consumers of dehydrated products felt, a letter was recently addressed to a list of one hundred and fifty hospitals known to be users of these foods. The replies were practically unanimous that dehydrated foods were found to be excellent in flavor and a real economy.

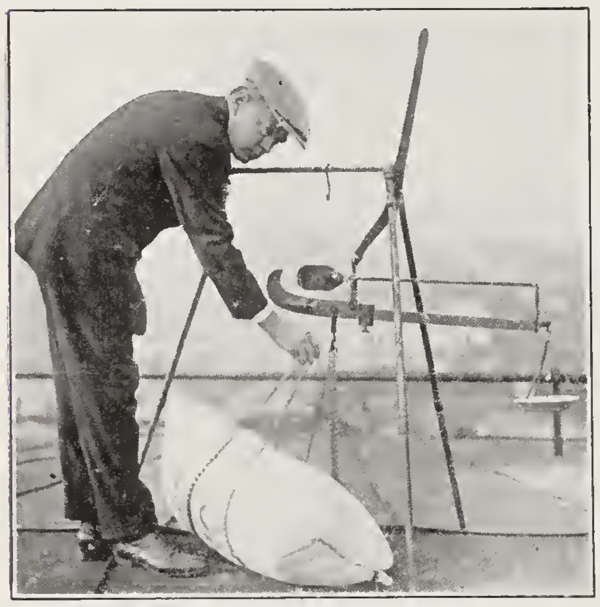
The future of dehydration is in the capable hands of those who have gone through with the experimental period and have paid for their experience. For those people dehydration is not something which consists of visionary enthusiasms. Most men who are pioneers are impelled more strongly by high ideals than by prospects of immediate profits in any industry, no matter what is said in this material world to the contrary. The ideal in this industry is to produce better, healthier, preserved foods than have ever been produced before and to place that better food in the hands of the public at less cost. This done, profit follows as a matter of course. These ideals are being realized and any one who studies the development of the dehydration industry to date and its future trend is immediately struck with the fact that it offers the most brilliant possibility of quick development shown by any new industry. Nothing is wrong with dehydration—give it time!

A Steelyards Support for Traveling Food Inspectors

By H. C. MOORE

Food and Drug Inspector, San Francisco Station, United States Bureau of Chemistry

SOME form of easily portable yet accurate scales of balances is an essential part of the equipment of food or feeding stuffs inspectors. Experts state that most commercial forms of platform scales when properly adjusted will remain fairly accurate if they are allowed to remain in the position in which they were tested. If subjected to much handling by transportation or otherwise, however, they may soon become inaccurate and totally unfit for accurate weighing. This is particularly true of platform scales where there are several points of suspension or where the impulse is communicated to the weight arm through several knife edges. The United States Bureau of Standards has stated that a "steelyard" is the only form of large portable scales whose accuracy is dependable. The "steelyard" is familiar to every one and needs no description here.

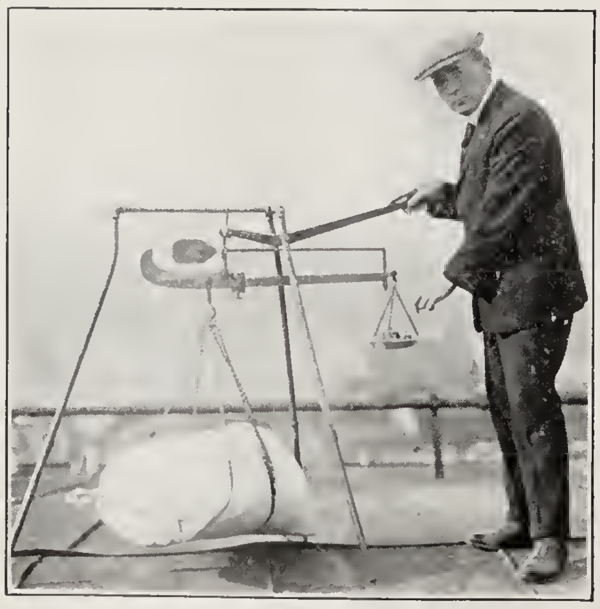


Arranging the scale for weighing

The inspector traveling or working in the field, however, has difficulty in finding a convenient means of support for the steelyard. It must be used in all sorts of places—on docks, in warehouses, or wherever the merchandise to be weighed is encountered. Very often the work must be done by one man without assistance. The necessity for some convenient method of handling the scales and the commodity is apparent when it is considered that many packages of food products, such as sacks of flour, feed, potatoes, boxes of fresh or dried fruits, may weigh from fifty to a hundred pounds or more.

The apparatus shown in the accompanying illustrations has been successfully used for some time under various trying conditions. One man can easily weigh sacks of flour or feed or large heavy cases of any commodity which would prove very difficult to handle in any other way.

The illustrations show the construction and method of operation. The tripod is 43 inches high over all and is made entirely of half-inch iron pipe, ordinary pipe fittings, "ells" and "tees," which are readily procurable anywhere, being used. The threads on the pipe ends are cut just far enough so that the pipe can be screwed together by hand without a wrench and yet fits snugly enough to make the tripod rigid. This feature is important for convenience. If the joints at the top of the tripod are screwed up tight with a wrench and the legs only can be loosened by hand, the tripod will be more rigid. The legs, which are 40 inches long, are bent at an obtuse angle near the top to give a greater spread and stability and are jointed with pipe couplings so they may be taken apart for ease in transportation. The horizontal piece of pipe is eighteen inches long. The lever for raising the steelyard has an angle of 25 degrees and may be purchased from any scale manufacturer or specially forged for the purpose. This lever is pivoted by a bolt passing through the two end legs, three inches from the top. Two pieces of pipe which exactly fit the bolt are used to keep the lever about one inch from the outer leg. The hook used to hold the lever up when weighing is made from a piece of one-quarter-inch steel rod, bent to the desired shape. The weight pan consists of a six-inch aluminum pie tin suspended by light-weight, closed-link, brass sash chain fastened to a brass hook. This pan must be large enough to hold several large weights light enough to balance the chain.



The scale in operation

The chain sling for holding the package to be weighed is one of the most important parts of the apparatus. Various forms of hooks and pans have been tried but nothing has been found so convenient as the form illustrated because it is adaptable to all kinds, sizes, and styles of packages. It is made of two pieces of heavy, close-linked, brass sash chain, each about six feet, nine inches long. These are fastened together at each end with a steel "split-link," so that it may be hung on the steelyard hook. An extra "split-link" is fastened on each chain twenty-one inches from the end so that smaller packages may be conveniently suspended. By placing a piece of board in the chain sling, packages of any shape may be conveniently weighed. It is important that this chain sling shall exactly balance the weight pan, so that it is not necessary to carry extra counterpoise or shot to balance the scale. The weight of the tripod, exclusive of the steelyard, is about seventeen pounds. A shipping case can easily be designed to hold the steelyards and the tripod in take-down condition.

Poisoning from Poor Coal

Poor coal, insanitary conditions and tightly closed windows have been responsible in many cases of poisoning carelessly ascribed to bad food, according to a statement made by Dr. J. C. Geiger, of the United States Public Health Service, and associate professor of epidemiology at the University of Chicago, after an investigation of a number of deaths in which the so-called poisonous food has proved, on being tested, to be harmless.

Dr. Geiger cites a recent case where he was called to a family of seven in Yonkers, N. Y., reputed to be suffering from food poisoning. The blame was laid on a can of spinach, of which the entire family had eaten.

"When we arrived," says Dr. Geiger, "the windows were all closed and the place smoky from a defective stove. The windows were opened and the stove repaired. Every one of the cases recovered. When some of the juice of the spinach was injected into white rats they showed no signs of being poisoned."

A Correction

Through an error in last month's issue of The American Food Journal the names under the photographs of Charles P. Whiteman, president of the National Food Brokers' Association, and James A. Anderson, president of the National Canners' Association, were transposed. Mr. Whiteman's photograph is shown on the outside column of page 121, with Mr. Anderson on the left.

THE CONFERENCE TABLE

American Package Macaroni Association "Passes On" Suggestions for Specialty Advertising

THE secretary and manager of the American Package Macaroni Association, C. F. Keene, contributes to the Conference Table some interesting suggestions for specialty advertising. The material has all been tested in a recent local campaign of the Association. In presenting it for the consideration of our readers, the Conference Table aims to bring out certain features that make this form of food advertising adaptable for use with various specialties.

Three Types of Specialty Advertising

Three types of material are presented, the first dealing with historical and nutritional facts concerning the product; the second offering a series of "working sheets" for the demonstrator; the third being a suggestive discussion of the product that is calculated to furnish material help to the retailer in marketing the product.

Under the heading, "Historical and Nutritional Facts," Mr. Keene has had prepared a series of terse paragraphs, each one dealing with the history of the food in question, its food value or its place in the esteem of eminent authorities on nutrition. These paragraphs lend themselves to any number of interesting "stunts"; they may be published on cards, incorporated in small handbooks or presented in numerous forms likely to prove helpful to both student and teacher of dietetics. We give an illustrative paragraph.

"John Phillips Street, the food authority, in his article in 'Modern Hospital,' vol. vii, p. 463, says: 'Many brands of macaroni show a carbohydrate reduction of from 40 to 50 per cent and possess positive merit in the dietetic for diabetes.' There is even a table showing the difference of values of what he calls the 'diabetis Macaronies.' With it estimated that a million and a half people in America suffer from diabetes it is quite natural that there exists an increasing interest in macaroni products."

In working up a series of such "news nuggets" the manufacturer would do well, it seems to the Conference Table, so to organize his facts as to have the series include historical facts, information regarding the place of the product in the normal diet and discussion of its place in the diet for diseased conditions. This last should take the form of quotations from authorities on nutrition.

"Working Sheets"

In a series of seven "working sheets" Mr. Keene has organized in a very workable manner much information that will help the "demonstrator" in presenting the product to the public. The first or introductory sheet is reproduced, together with one sheet illustrating one of the demonstrations. This material should prove of practical help to the teacher of domestic science as well as to the commercial demonstrator. The many sidedness of this educational matter is very appealing to any one interested in "getting across" food lessons to varying audiences.

INTRODUCTORY WORK SHEET OUTLINING SCOPE OF MATERIAL

The outlines here presented for lecture-demonstrations suggest six dishes which can be made with macaroni, spaghetti or noodles. Each of these is suitable for the main dish of a meal. Two recipes have been chosen which are particularly popular with children; two in place of meat; two in which noodles are combined with chicken or meat to make a one-dish meal.

The recipes are outlined here on separate sheets, since it is sometimes desirable to prepare only one of these dishes during a demonstration. Other dishes which are suitable for serving at a meal in which macaroni, spaghetti or noodles are served are included. The time necessary to prepare each dish is indicated as well as the number of small portions which each dish will serve after the demonstration.

These recipes have been prepared with special reference to the needs of the average household and make use of material which every housewife has on hand.

A supply of recipe sheets to be distributed to the persons attending the demonstrations will be forwarded upon request to American Package Macaroni Association, 326 West Madison street, Chicago, Ill.

The charts are of such size and shape as to make them practical in compiling a card file of suggestions for class room or demonstration room.

Material of Interest to the Retailer

Material in the third group is in the form of a circular addressed to the retailer. We quote the opening paragraph:

"Present day grocery merchandising success is predicated on a thorough knowledge of the source, quality, food value, popularity, profit from rapid turnover and concomitant value of the food products as used by the consumer with other staple foods.

"The sale of one staple is generally the forerunner of other purchases that make for satisfactory volume and profits. The merchant who uses this fact to increase his sales is the one who stands out as a shining light for others to follow—a good merchandiser.

"From three to five out of a possible twenty-six grocery items are used in

SPECIMEN WORK SHEET, SHOWING HOW THE MATERIAL IS ORGANIZED AND PRESENTED

MACARONI LOAF

Materials Needed

1 cup macaroni.
1 cup bread crumbs.
1 cup milk.
3 eggs.
1 teaspoon salt.
1 teaspoon onion juice.
1 tablespoon chopped parsley.
¾ cup chopped cooked meat.
1 tablespoon sweet red pepper.
1 can tomato sauce or 1 cup tomato sauce.

Utensils Required

Cup.
Tablespoon.
Teaspoon.
Saucepan.
Mixing bowl.
Baking dish.
Pan for baking dish.

What to Do Before Beginning Demonstration

If time is limited, cook macaroni before demonstration begins.

Measure all ingredients, crumb bread, chop meat, parsley and pepper. Squeeze out onion juice.

What to Do During Demonstration

Cook macaroni in boiling salted water 30 minutes.

Drain, scald milk, add bread crumbs, peppers, salt, meat, onion juice, slightly beaten eggs and macaroni.

Turn into greased baking dish and set in pan of hot water. Bake 45 minutes.

Suitable Combinations for Serving

Cole slaw
Pineapple dessert
Escalloped cabbage
Tomato salad
Berry pie
Cream of celery soup
Baked apple stuffed with raisins

Remarks

Grated cheese may be used instead of meat.

Cold boiled or roast beef is excellent.

Cold roast pork or chicken may be used in this recipe.

Time required, one to one and one-half hours.

Number of small portions for demonstrations, 36 to 48.

the preparation of every macaroni product dish in American homes today. The sales possibilities of this group are capable of producing in themselves a very considerable part of the net profits of a properly conducted business."

Continuing, Mr. Keene gives the retailer a series of pertinent facts regarding the product, telling something of its food value, manufacture, and its place in the diet. Unquestionably it is "good business" for the retail merchant to gather into usable form such material as this, so that his selling force may add intelligent knowledge of the food value of the product to his equipment for either store or field.

The Food Manufacturer and the Trained Woman

By JEAN K. RICH
Educational Department
Royal Baking Powder Company

Editor's Note—Believing that cooperation between the manufacturer and the domestic science woman is vitally important to the best interests of all concerned, we have invited to the Conference Table this month a representative of both groups.

"BUSINESS home economics" is the newest type of teaching and has not, of course, reached its limit of development. The old idea was that one lost caste when one "commercialized" the profession, but now some of our best known pedagogues have at least one finger in the commercial pie. This is partially because the standards of advertising foods and household utilities have changed, and inversely, to some extent, they have changed because of the entrance of such women to the business field.

It is interesting to note the many ways by which the trained home economics woman is influencing the public health and welfare, and to compare these with the limited opportunities of yesterday. When home economics was young practically the only positions open were those for class-room teaching.

Today we find that help for the community may be had from different sources. There are the school employees, the state and county advisers, the nutrition experts, the dietitians, and now the business women. All of these women, I believe, should be considered as teachers.

The question raised in many instances is: Are such women of real assistance to the general welfare of the public? The answer is: Certainly! Each of these women is a specialist and as such has something of value to offer, and should not be regarded as simply and solely a demonstrator of a given product.

The state, county, or city worker cannot do all the work, both from lack of time and lack of funds. The manufacturer on the other hand has the money. It has been said that the advertising force is one of the strongest forces today. Many of the better companies now maintain really educational departments.

To be more explicit, where a manufacturer carries on the best kind of educational advertising we find it done by trained women who work ethically according to high standards. Such work is of real benefit to the community touched. These women are of assistance because they teach better food preparation, the composition and use of manufactured foodstuffs, and the use of household appliances, and promote, thereby, an improvement in both health and nutrition.

Presupposing a foundation in home economics, it may be well to mention some of the more salient requirements for the woman who expects to do educational advertising in home economics so that it will be of benefit to all concerned.

1. Training in business methods as compared to those of pedagogy. These might well be included in college studies, but are now commonly acquired with experience.
2. A loyalty to the manufacturer and a belief in his product.
3. A maintenance of ideals and ethics, that the standards of "commercial work" may be raised and kept high.
4. A sense of humor—very necessary upon occasion.
5. The ability to meet the other fellow more than half-way.
6. A determination to give only reliable information to the best of her knowledge.
7. An abiliy to work with good, bad, and indifferent equipment, as circumstance may require.

Advertising to Hotel Guests

Among other important problems "The Hotel Market," a pamphlet recently issued by "Hotel Management," discusses a question of interest to food manufacturers — the selling of food products to hotels. The discussion divides food products purchased by hotels into three classes, standard products, as flour, salt and eggs, specialties which may be served in the original containers, such as beverages and jams, and articles that cannot be branded or made identifiable except by listing on the menu. Suggestions as to handling each of these groups are given, those relating to the third class being particularly interesting.

Commenting on the obvious advertising value of reaching large numbers of hotel guests, the attention is called to a still more interesting point—the character of these guests. As a rule they are possessed of ample incomes, they are "good propagandists," their favorite topic of conversation being food. Finally, they are not "home people"; they do not see the home magazines where these foods are advertised and their chief point of contact is through the hotel or restaurant menu.

A trade name on the hotel menu possesses great value to the manufacturer, a recent investigation made by "Hotel Management" showing the following facts:

In favor of listing brand names	74
Not in favor	18
Depends on hotels	5
"On the fence"	4
No answer given	8
	100

Readers desiring information concerning this publication may receive address by sending a stamped, addressed envelope for reply to The American Food Journal.

Caffeine in Mate

Editor, The American Food Journal:

"I have found the clipping from The American Food Journal which I inquired about a day or two ago. It was in the February issue on page 95 under the heading "The Rival of Tea Appears." One of the Pacific Coast coffee roasters called this to our attention, and suggested that we investigate the statement in this item that mate contains "much less tannic acid or caffeine than green or black tea, or even than coffee, and is therefore supposed to be less narcotic than the others."

Since this item is taken from a consular report, we do not want to find fault with the Food Journal, but for your information and the information of your readers, I am sending you extract from a letter received from Professor S. C. Prescott of the Massachusetts Institute of Technology whom we asked to comment on this article. Professor Prescott says:

> I, of course, do not happen to have before me the analysis on which the statement that mate contains less tannic acid than tea was made, but in view of the fact that it is almost impossible to find tannic acid of any sort in coffee, I am strongly inclined to question that part of the statement. I should not want to state, without seeing the figures, that there is less caffeine in mate than in coffee. The last part of the statement that it "is, therefore, supposed to be less narcotic than the others" (tea and coffee) is, in my opinion, based on a misconception. Coffee should not be regarded as a narcotic nor should tea, as, if properly made, neither of these beverages are toxic or depressant in action.

A. P. AMES,
Publicity Director, Joint Coffee Trade Publicity Committee of the United States.

The Best Things From Current Food Magazines

A Digest of the Month's Periodicals for the Busy Reader

Cheese Consumption Below Other Diary Products

THE average American eats but four pounds of cheese a year, according to C. W. Larson, chief of the Dairy Division, United States Department of Agriculture in the "Butter, Egg and Cheese Journal." The Englishman, says Mr. Larson, consumes more than eleven pounds of cheese in the same time, the Dane and Hollander more than twelve, and the Swiss more than twenty-five pounds.

"An analysis of the situation for the first nine months of 1922," he continues, "shows that 262,895,000 pounds of cheese were made (in America), as compared with 283,944,000 pounds for the corresponding months of the previous year. Our production, therefore, dropped approximately twenty-one million pounds. Our consumption of cheese, however, has not decreased so much as that, for in the same months in 1921 we exported 10,442,000 pounds and in 1922 we exported only 4,058,000 pounds, while the imports jumped from 15,534,000 in 1921 to 26,420,000 pounds in 1922. This gives a net import of seventeen million pounds more in 1922 than in 1921.

"It would appear from this that we have consumed within about five million pounds of last year, but that more of the cheese was of foreign production. The cold storage holdings on December 20, 1921, were practically the same as on the same date in 1922, being on both dates approximately 11,500,000 pounds.

"All this shows that unlike all other dairy products cheese has gone down in production, exports have decreased, imports increased and consumption decreased.

"For the first nine months of 1921 we imported a little over four million pounds of Italian cheese, while for 1922 imports from the same country were more than 7,500,000 pounds. The imports of cheese from Switzerland for the nine months increased from a little over 1,500,000 pounds to over 7,500,000 pounds in 1922.

"These are the facts with respect to the production and consumption of cheese in the United States, but it is not easy to explain the cause of this condition or what will probably be the development in the next few years. There are a great many people in this country who prefer cheese of the foreign varieties and although imports increased from about 15 million pounds for the first nine months of 1921 to 26 million pounds in 1922, still the importations are now only about half what they were before the war."

Systematic educational work to show the American people the food value of cheese is recommended by Mr. Larson, who believes that the increased consumption of milk and butter can be largely attributed to such efforts.

The Heat Resistance of B. Botulinus Spores

A STUDY made to establish the maximum period of survival and death at different temperatures required for B. botulinus spores, under the most favorable conditions for production and with optimum recovery of the heated spores has been described by J. Russell Esty in a paper read at the annual meeting of the Society of American Bacteriologists, reprinted in "The American Journal of Public Health" for February. The resistance of spore-bearing cultures of B. botulinus was tested by resuspending the spore sediment in a standard well buffered solution remaining unaltered during heating at high temperatures. This method, Mr. Esty explains, gives comparative results which show definite relationships with respect to the factors involved.

The following summary of the study is given by the writer:

1. The heat resistance of 112 strains of B. botulinus including 81 Type A, 30 Type B and one non-toxic varies from three to 75 minutes at 105 deg. C. The spores are produced in pea-peptic-digest pH 8.0 and heated in a phosphate solution of approximately pH 7.0. The strains originated from 29 outbreaks of human botulism and 16 outbreaks of animal botulism, in addition to numerous other sources such as suspected canned foods, raw plant products, soil specimens and material from forage poisoning cases.

2. The heat resistance of 81 Type A strains varies from three to 75 minutes at 105 deg. C. with an average resistance of 41.1 minutes. The resistance of 30 Type B strains varies from three to 60 minutes at the same temperature with an average of 23.8 minutes. The resistance of one non-toxic strain is 30 minutes.

3. The maximum heat resistance of B botulinus spores produced under optimum conditions of growth is 330 minutes at 100 deg. C.; 110 at 105 deg. C.; 33 at 110 deg. C.; 11 at 115 deg. C., and 4 at 120 deg. C., when heated in a phosphate solution of pH 7.0. These figures represent the time in minutes at which no spores have survived. The longest survival time at the same temperatures and under identical conditions is as follows: 320, 100, 30, 10 and 4 minutes respectively.

4. Spores of B. botulinus are more heat-resistant than those of the other anaerobes thus far tested.

5. The heat resistance of different strains of B. botulinus varies irrespective of the numbers of spores produced in the same medium. Few spores of certain strains may be far more heat resistant than large numbers of other strains.

6. The heat resistance of the same strain is markedly influenced by the number of spores heated. The larger the number present in a suspension, the greater the resistance.

Bureau of Chemistry Experiments with Cassina

THE results of investigations made by the Bureau of Chemistry of the United States Department of Agriculture into the production of beverages from cassina are given in "The American Bottler" for March, by George F. Mitchell and J. W. Sale. The cassina plant grows abundantly along the South Atlantic and Gulf Coast. Cured cassina leaves have been used to some extent in the southern states, and many inquiries have been received by the department relative to the use of the beverage.

The active principle of the plant, according to the writers, is caffeine, the same stimulant that is found in tea and coffee. Samples of cassina analyzed in the Bureau of Chemistry ran as high as 1.65 per cent of caffeine. The average of all analyses of the plant made by the bureau was 1 per cent.

Having proved by laboratory experiments that a palatable and pleasant beverage could be made from cassina leaves, and that these might be used in the same manner as tea and coffee, the bureau undertook to demonstrate its utility on a commercial scale. An experimental commercial factory was established during the summer of 1922 on the plantation of Alfred Jouannet, at Mt. Pleasant, South Carolina. The large cassina hedges on Mr. Jouannet's plantation provided ample material for the demonstration. About five thousand pounds of cassina—green cassina, black cassina and cassina mate, were produced, and the experiments indicated that the product can be produced very cheaply in comparison with commercial tea, since all of the cassina leaves contain caffeine, and they can be removed from the pruned branches with live steam. The number of steps in the process of production are fewer than in the production of tea, and a small amount of hand labor is necessary.

The five thousand pounds of cassina manufactured at Mt. Pleasant is now being placed on the market commercially in half-pound containers to further test the commercial possibilities of the product.

Importance of Determining Gluten in Flour

THERE is a general mistaken idea that the usual chemical method of determining gluten in flour gives results which are somewhat too high as compared with the amount to be obtained by hand washing, says George L. Teller, of the Columbus Laboratories, Chicago, in the March number of "Modern Miller."

"On the other hand," he explains, "there is a tendency in many instances to give, by hand washing, an apparent gluten which is much too high because of impurities present, and we have sometimes had reason to believe that this tendency has been intentionally used for the purpose of showing a high gluten content where it was not present. In a few instances some very low grade flours give low gluten by hand washing because of interfering substances which break up the gluten and cause it to wash away. Gluten is certainly present in quantity, but the impurities are sufficient to change its character much as the character of glute from any flour is changed by fermentation of a dough made from it. We cannot generally obtain the gluten by washing a well fermented dough of any flour without special precautions, such as the addition of salt to the water; yet gluten is clearly present and serves all the purposes which gluten ever serves in bread making. Correcting for added ingredients and the protein in yeast, we will, by the chemical method, find gluten present in substantially the same amount as in the flour. It is generally more difficult to obtain all the gluten by washing high grade soft winter wheat flour than by washing hard winter wheat or spring wheat flour. The glutens of the latter are more tenacious in character and do not so quickly wash away. In the write's experience, flours have been found which contained as little as 6 per cent of gluten, and some as high as 16 per cent gluten. The average amount of gluten in the better grades of spring wheat flour is about 11 per cent, and in general this is a very satisfactory amount for breadmaking purposes. A fair average 95 per cent flour from soft winter wheat will contain from 8½ to 9 per cent gluten, and a good 95 per cent hard winter wheat flour may contain from 10½ to 11½ per cent gluten.

"While some of these flours have special uses, nearly all of them, even with exceptionally high or exceptionally low percentages of gluten, will make good bread and good biscuit if properly handled, but flours containing different quantities of gluten require different handling in the bake shop and in the kitchen, and require different amounts of fermentation to get the best results out of them.

Purest Sugar Should be used for Bottling

THESE important facts, according to a writer in "The National Bottler's Gazette" for March, should be remembered by every bottler in selecting his sugar for sweetening: A properly refined sugar of large crystals, combined with pure water, made into a clean, pure sirup by sterilized utensils and containers, run through sterilized pipes and pumped into the bottle through a sirup pump that is above suspicion, will, when combined with properly purified carbonated water, result in a finely blended beverage, with excellent flavor and good keeping qualities.

To get the best results in bottling, the writer points out, the bottler should try to determine the strength of his sugar before using it. For the greatest maximum sweetening strength only the very best and purest refined sugar should be used, and each invoice should be tested, since the quality of the same sugar may vary from time to time.

Refined sugar which is made of the larger crystals, the writer believes, contains fewer impurities than the finer grade, and is therefore better for the bottler's use. While it may take three times as long to dissolve these crystals as it does the refined sugar, the time is well spent if a better beverage results.

Another point emphasized by the writer is that sugar for bottling need not necessarily be pure white, or what is known as a blue-white sugar. He believes that a bottler should keep away from blue-white sugar, in which Ultramarine blue has been used. Again, in dumping the sugar and water together in the mixing pot or cauldron, the bottler must exercise his best judgment. The cauldron or receptacles should be thoroughly scalded with boiling hot water and drained out quickly; the paddle or stirring-wheel, or whatever is used to mix the water and sugar together, should be sterilized.

The purity of sugar is its self-protection, and products made from pure sugar are much less prone to degeneration and consequent fermentation than those in which the sugar is carelessly selected and handled.

Making Salt from San Francisco Bay

The way in which salt is made from the waters of the Pacific Ocean, which supplies neearly all of the salt used on the western coast, is described in a recent issue of "Pacific Fisherman," by J. E. Shields. San Francisco Bay contains a fair amount of sewage from the Bay cities; yet California salt, according to the article, is purer and of better quality for fish curing than much of the salt marketed from other sources. No trace of contamination has been found under government examination.

The water is taken off the bay at high tide into a field which is diked off. From the far end of the field there are several windmills or electric pumps pumping salt water into smaller fields; hence the water gradually works from one end of the field to the other, until it reaches a density of 25 degrees Baume, or 100 degrees salometer, at which the salt crystals begin to form.

When the brine reaches a density of 15 degrees Baume, calcium sulphate (lime) begins to come out and continues to come until the brine reaches 24 degrees Baume. Therefore, if the sodium chloride (common salt) is allowed to crystallize in the same pond where the lime crystallized, they will be mixed, and no amount of washing would ever take the lime out, since it is not so easily dissolved as the salt itslf. It must be got rid of before the salt crystallizes. Therefore, when the brine reaches 24 degrees Baume, it is dumped over into the salt crystallizing pond.

As the water evaporates the salt that was in solution must crystallize, since there is no water to hold it. This crystallization goes on until the brine reaches Baume 32 degrees, when it must be taken off the crystallizing ponds. The brine at this stage is called bittern, which, properly treated, produces magnesium sulphate (epsom salts), sodium sulphate (glauber salts), and magnesium chloride, which is very bitter. After the salt is crystallized it is piled up and passed through grinding and washing apparatus.

One hundred tons of sea water, the author states, will produce about two and one-half tons of good, refined salt, so that to make twenty thousand tons over eight hundred thousand tons of water must be evaporated.

EDITORIAL

Decision in Mennen Case Injects Sense into Resale Price Situation

THE principle that the manufacturer of a proprietary product has the right to maintain established trade channels in the distribution of his article and the right also to recognize such regular channels of trade in the naming of selling prices, a principle for which many maufacturers have contended for years, has been sustained in a decision of the United States Circuit Court of Appeals in the well known Mennen case.

Incidentally, this decision is a blow to the contentions of the Federal Trade Commission that practices, long considered by manufacturers as justifiable in their own protection as well as for the protection of the wholesaler and the retailer, were unfair methods of competition and therefore in violation of the anti-trust laws.

Common sense has ruled in this decision. No fair-minded, unbiased person could successfully sustain the contention of the Federal Trade Commission that a manufacturer must not discriminate between classes of purchasers. The quantity price will of course always rule in certain kinds of business, but the manufacturer of a trade-marked, advertised article has an inalienable right to protect the selling price of that article. It is surprising that there has been so much litigation over a matter which to the unbiased mind must have always appeared to be a simple one of property rights. On this question of property rights the department store, the chain store and the cut-rate grocery and drug store have long maintained that it is their privilege to sell at any price they choose those goods which have become their property and the only weapon which has been left in the hands of the manufacturer who wanted to protect his resale prices was a refusal to sell. That the Circuit Court of Appeals has now fully sustained the manufacturer in this right to refuse to sell whomever he pleases once more establishes sense in a much clouded merchandising condition.

Building on Good Results Accomplished by Federal Food and Drugs Act

IN another column we comment on the statement of Mr. Campbell, acting chief of the Bureau of Chemistry, that less food adulteration is found today than at any previous time. This is gratifying, alike to the high-minded manufacturers who have been instrumental in bringing about the desirable state of affairs and to the consuming public benefitting thereby. May it not be taken as a challenge to still further accomplishment?

Recently an economist asked The American Food Journal whether or not standards of quality had been set equally for all foodstuffs, citing the well known fact of wide-spread popular knowledge in the matter of quality standards for milk.

The question set us thinking.

Might not manufacturers unite to create an increase of popular knowledge regarding what they have accomplished in raising the standards for ALL foodstuffs?

Undoubtedly, in the case of milk there was an initial advantage owing to the fact that this is one of the first foods to present itself to the mind of the person responsible for the feeding of children; each of the foodstuffs, however, plays its own important part in contributing to a well balanced dietary and it would seem that manufacturers might easily formulate plans to set in motion machinery that should educate the public as to what constitutes high quality and what has already been done to secure and maintain this quality.

Perhaps the first step would be to extend the already admirable educational advertising being carried on by so many manufacturers as to the food value of their products, making the while a concerted effort to inform the consumer as to WHY each product is what it is. This involves more than generalizations regarding purity. It means making each product stand out in its own particular place in the food scheme; it means making the consumer intelligent in his demands for quality; it means informing the consumer that the Food and Drugs Act accomplishes more, important as that is, than keeping out impurities, and it means that when the consumer thinks of "jam" or "coffee" or "cheese" or "soup" he automatically thinks of the points that enter into one hundred per cent jam or coffee or cheese or soup.

Again, this is a matter larger than special brands, although including special brands in its application. It is something larger than differences in taste as to flavor or texture or combination. It is a matter for associations, perhaps, rather than individual manufacturers, since it involves a constructive program of concerted action on the part of ALL manufacturers that they may reap the full fruits of their own fine work.

Texas Bill Puts Restrictions on the Manufacture of Self-Rising Flour

THE Texas Legislature has followed some of the other southern states in enacting a measure relating to self-rising flour that is destined to protect both the millers and the public.

The revised statutes of 1911 are to be amended to include a provision for the affixing of a label distinctly printed in plain capital letters in the English language, containing the name and domicile of the manufacturers or dealers and the percentage by weight of each of the chemical leavening ingredients of the contents thereof.

The measure, which has been approved by the governor, further provides that the product in question "shall produce not less than one-half of one per cent, by weight of available carbon dioxide gas," as well as limiting the self-rising flour to three and one-half per cent of chemical leavening ingredients. Any deviation from this standard stamps the flour as "adulterated."

Finally, self-rising flour is defined as "a combination of flour, salt and chemical leavening ingredients, bicarbonate of soda, and either calcium acid phosphate, sodium aluminum sulphate, cream of tartar, tartaric acid or combinations of the same."

While there have been any number of reputable self-rising flours on the market the fact that there were no legal restrictions on their manufacture meant leaving the door open to unscrupulous or careless manufacturers.

Mr. Campbell of the United States Bureau of Chemistry, said recently: "The food we eat today is freer from harmful preservatives and other added deleterious ingredients than ever before." It is gratifying to observe that self-rising flour is falling into line and joining the already gratifying long list of foods that may rightly be designated as pure."

BOOK REVIEWS

What to Eat in Health and Disease. By Benjamin Harrow, Ph.D., Associate in Physiological Chemistry, College of Physicians and Surgeons, Columbia University. E. P. Dutton & Company, New York. $2.

A non-technical but authoritative presentation of the principles of diet selection, together with the reasons which govern such selection.

Dr. Harrow pays his readers the compliment of realizing that they will welcome information concerning the great authorities who are helping to formulate the present-day standards of dietetics; he therefore includes portraits and biographical information concerning a half dozen or more of these authorities: Chittenden, Hopkins, Mendel, Aberhalden, McCollum, Hindhede, Funk and Osborne among others. There are also numerous quotations and citations from the writings of these men.

Practical suggestions on meal planning present the governing principles of this important work in a nutshell, a workable plan for achieving balanced meals being a strong feature of the book.

Another feature is the peculiarly successful interpretation of the scientific work of Dr. Harrow's colleagues. It is interesting to note that in Dr. Harrow's case, at least, it is possible to accomplish original work and apply the results of others at one and the same time. The chapter on overweight is one of the best so far published on this subject of ever popular appeal.

A careful reading of the chapter, "Diseases Due to Faulty Diet," should go far toward preventing much of the suffering due to improper feeding. Taken all in all, Dr. Harrow's book might well head a list of works suggested for one who wishes to get a comprehensive idea of the subject before beginning detailed study of specific phases.

Glue and Gelatin. By Jerome Alexander. American Chemical Society. Monograph Series. Chemical Catalog Company, New York. $3, net.

This monograph, which is one of the American Chemical Society series on scientific and technologic subjects, will perhaps most interest chemists, as a survey of available information concerning glue and gelatin and a history of developments in that field. The manufacture of the two products is of great importance, not only because of the size of the industry itself, but because they are essential to the production of many other products, and a study of the monograph shows how closely the industry is connected with other fields of work.

The chemistry and technology of glue and gelatin are discussed, as well as the testing and grading and the uses of the products. Test methods for grading, suggested by the Technical Section of the National Association of Glue and Gelatine Manufacturers, are given, with a description of the type of gelometer recommended by the committee for determining jelly strength.

The Stag Cook Book. A Man's Cook Book for Men. Written for Men by Men. Collected and Edited by C. MacSheridan, with an Introduction by Robert H. Davis. George H. Doran Company, New York, $1.50.

Beyond question the editor of this collection of recipes has made an original contribution to culinary literature! Moreover, it is a practical contribution. True, the directions are written in a style uniformly casual, but the fact remains that the corn bread of Charles Evans Hughes, the "favorite menu" of Charles W. Eliot, the deep apple pie of Lyman Abbott, the corn pudding of Charles Hanson Towne, not to mention the favorites of numerous other gentlemen, equally distinguished, have a wide appeal!

The "human interest" side of cookery is shown by the famous folk to be of paramount importance. Certainly the book is more intriguing to the reader's interest than the most scientific manual ever published, although, naturally, it will not replace the serious books on cookery, nor was it meant so to do.

Eating Vitamines. By C. Houston Goudiss. Funk & Wagnalls Company, New York and London. $1.33 net.

An attempt to translate vitamines into terms understandable by the average housewife, with menus and recipes which will enable her to use them intelligently.

Marketing by Cooperative Sales Companies. By Theodore Macklin. Agricultural Experiment Station, University of Wisconsin, Bulletin 346.

The two most important questions relating to the establishment of a cooperative marketing company are, first, how may the cooperative marketing company give better service than the private company; and, second, how may the cooperative marketing company operate with lower expenses than the private company? This bulletin tells how the Wisconsin Cheese Producers' Association developed its business, and solved both of these problems. The information about its sales methods, operating costs, form of organization and storage problems should be of value to those interested in marketing butter, fruit, livestock, or any other farm produce.

Patents, Law and Practice. Richards and Geier, New York.

Trade-Marks, Trade Names, Unfair Competition. Richards and Geier, New York.

These two booklets contain valuable information for food manufacturers and others. The first, covering the subject of patent law and practice, is based principally upon the Revised Statutes, the Rules of Practice of the United States Patent Office and the decisions of the courts and commissioners of patents. It describes the steps necessary to secure protection for patents, and gives information as to what may be patented, how to make out an application, the procedure in the patent office, interferences, infringements, and the schedule of charges.

The second publication discusses the selection of appropriate trade-marks, pointing out the different considerations governing the adoption of a symbol intended to reach various classes of people. It also describes the registration of trade-marks in the states, the United States and in foreign countries. This booklet should be particularly helpful to the manufacturer, who finds the trade-mark almost indispensable to his advertising plans.

Recent Books

What Shall We Have to Eat? By J. E. Burdick. University Society, New York. $1.50.

Dietotherapy. By W. E. Fitch and others. Second edition, revised. Three volumes. Appleton & Company, New York. $22.50.

Miss Jenkins' Sketch Book, with Drawings, Poems and Directions for Tinting. By E. Jenkins. Child Health Organization of America, New York.

Science of Eating. By A. W. McCann. Doran & Company, New York. $2.

Food Lessons for Nutrition Classes. By M. D. Rose. Teachers College, Columbia University, New York. Fifteen cents.

Food Planning and Preparation. By M. T. Wellman. J. B. Lippincott Company, New York. $2.

Required Foods for the Prevention and Cure of Disease. By F. L. Wilson and E. L. Burnee. Second edition. Published by the Author. 1912 East Taylor Street, Bloomington, Ill. Seventy-five cents.

Study of Price Control. By the United States Food Administration. By J. C. Bartley, Catholic University of America, Washington. $1.

FOOD AND HEALTH EDUCATION

A Department of The American Food Journal
Edited by WINIFRED STUART GIBBS

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A Coordination of Industry and Education

How the Dairy Council Cooperates with Philadelphia Schools

Based on An Interview With Robert Balderston
Secretary of the Philadelphia Inter-State Dairy Council

THAT old-time bugbear, "commercialism," does not trouble the domestic science workers in the schools of Philadelphia and the reason for this desirable state of affairs is that the Philadelphia Inter-State Dairy Council maintains so high a standard in selecting its nutrition workers that they take their places as a matter of course in the ranks of the educators. The nutrition work of the Council is in direct cooperation with the public schools of Philadelphia.

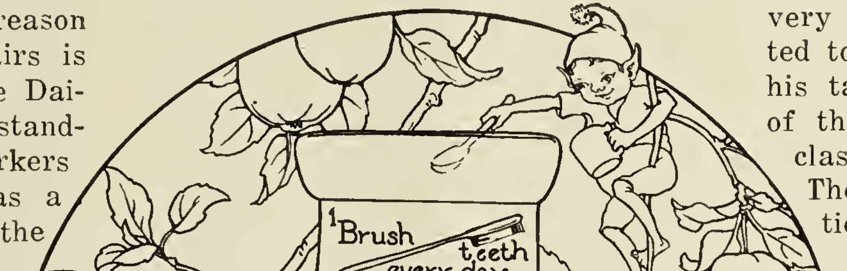
An example of the type of work carried on jointly by the Council and the public schools of Philadelphia is a book of Mother Goose Rhymes. This book is published by the Philadelphia Inter-State Dairy Council which also provided the illustrations. The rhymes, however, are written by the children of the schools. Two specimen illustrations are given on another page. Credit is given to the school children supplying the rhymes on the inside back cover of the books:

These Mother Goose Milk Rhymes were written by the fourth grade pupils of the Walton School, Philadelphia.

Maybe you like to write Milk Rhymes. If you know a good one send it to

Johnny Milk,
810 South Michigan Ave.,
Chicago, Ill.

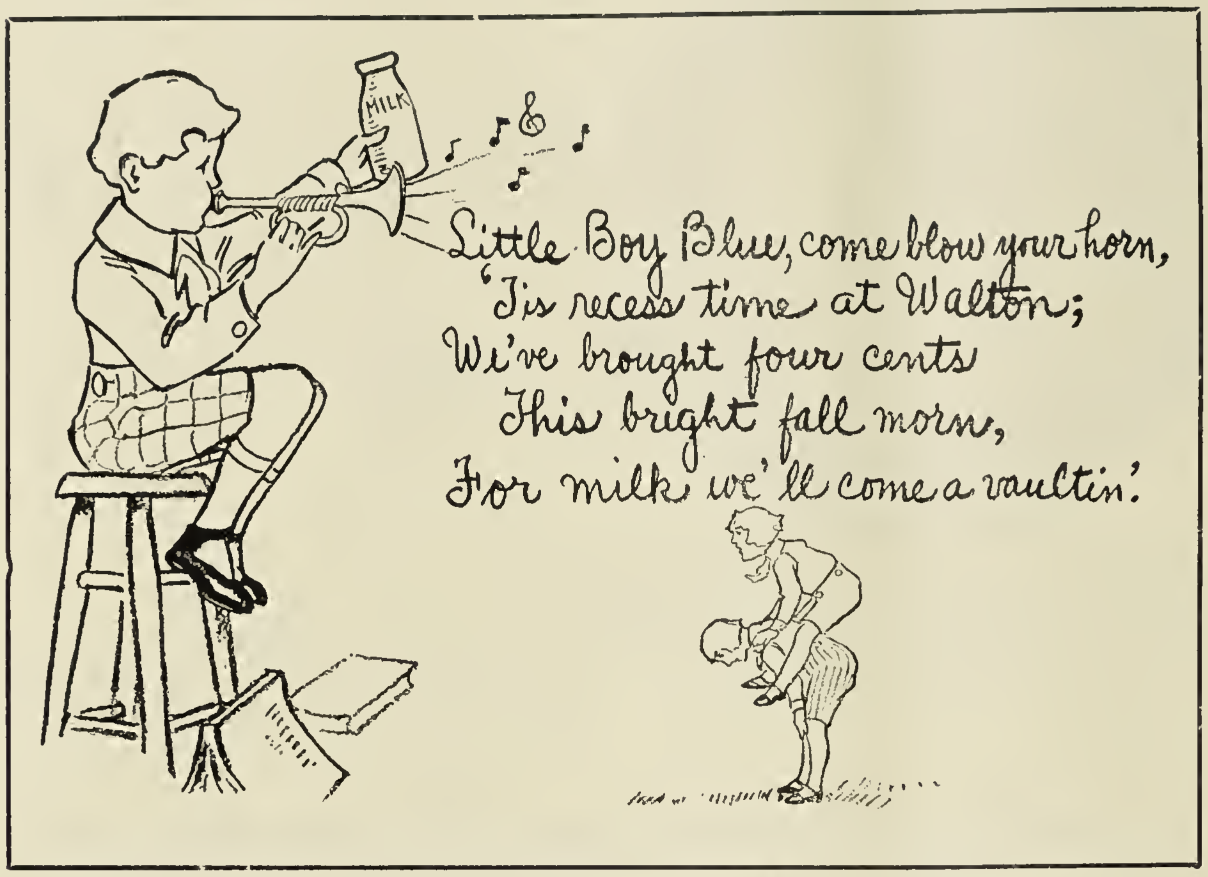
The provision for the individual signature of each little owner carries a strong appeal for the children, great pride being taken in exhibiting a neatly written copy. The individual health card is also very popular, each child being permitted to color his own card according to his taste, thus coordinating the work of the nutrition classes, the painting classes and other school activities.


1 Brush teeth every day
2 Eat fruit every day
3 Drink at least four glasses of water every day
4 Eat some vegetable besides potato every day
5 Drink milk and milk and eat cereal each day
Away with tea and coffee
6 Play part of every day out of doors
7 Take a bath oftener than once a week
8 Sleep many hours with the windows open
ALL FOR HEALTH

These health cards are colored by the children

The Council has developed an educational organization with a specialized nutrition health service carried out by a trained staff of qualified workers. A corps of sixteen specialists is trained to serve in a distinct field of cooperation in conjunction with such regular health work as is carried on by the city schools, clubs, or factories. They have been selected because of their ability to present their subject in the most convincing and practical manner. The Dairy Council believes that its greatest usefulness lies in cooperating in and supplementing the activities of other organizations whose work is the improvement of the public health and welfare. It has accomplished this cooperation in a number of instances, of which it is necessary to mention only a few, such as school medical inspection, visiting nursing, and instruction in foods and nutrition.

The service of the Council is varied, one of the most popular forms being the telling of stories by its staff of nutrition workers in the schools. Specimen illustrations from two


MILK
Little Boy Blue, come blow your horn,
'Tis recess time at Walton;
We've brought four cents
This bright fall morn,
For milk we'll come a vaultin'.

A Mother Goose rhyme made by a child in Walton School, Philadelphia

of these stories, "Putting Pep In Your Motor" and "David and the Good Health Elves" (an adaptation from a story published by the Anti-Tuberculosis Society of Wisconsin), show their general character.

The tray of foods used by the storyteller is made by the workers and very life-like representations of the different foods are achieved. To quote a paragraph or two:

"Who are you?" said David.

"Wait a minute," said the elf, "and see if you can't guess." (Guessing) "My brown coat stands for the brown jacket of the baked potato, the brown of the oatmeal, the toast and the brown bread and the golden brown of the egg yolk and the cream of the milk." He put a big flat thing on the bed and whisked the cover off. There was a tray full of good things to eat. First there were the vegetables, especially those with green leaves, vegetables like spinach, lettuce, cabbage, carrots, beets and kale. Then there were fruits—oh, all kinds of good fruits that you ever heard of. But there were especially big piles of apples and oranges. Then there was a plate of brown bread and butter, a bowl of oatmeal and then there was a great big bottle of milk. As David sat looking at this tray he heard the little food elf singing a song that went something like this: (Tune—Merrily We Roll Along).

Merrily we drink our milk, drink our milk, drink our milk,
Merrily we drink our milk, to make us fine and dandy,
Four big glasses every day, every day, every day,
Four big glasses every day, and very little candy.

"Very little candy!" exclaimed David. "But I like a lot of candy."

"Oh, very little candy for boys and girls that are going to be big and strong," said the good food elf.

"But what about the pickles and the sweet cakes?"

"Oh, very few pickles and sweet cakes for boys and girls that are going to be big and strong."

"But I see only milk on this tray. Where's the tea and coffee?"

"No tea or no coffee at all for girls and boys that are going to be big and strong."

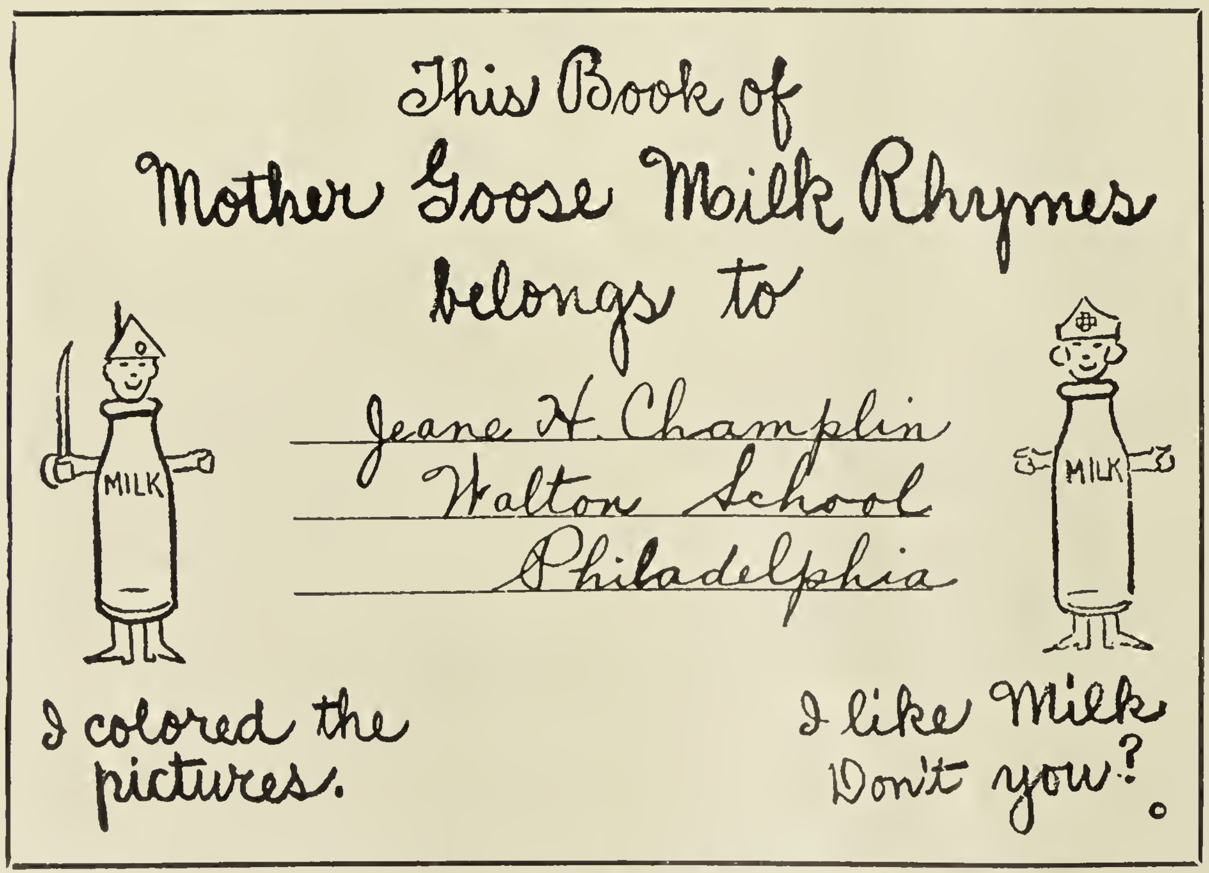
"Oh", said David, "You Good Health Elves haven't told me a single pleasant thing to do and I'm not going to listen to you any longer for everything you've told me has just been just as disagreeable as can be." And David pushed that tray of foods off his bed and slipped down under the covers and closed his eyes!

Then the story goes on to show how the elves told the little boy just what to eat and the ending is the ever popular "happy" one!

"Putting Pep In Your Motor" is a particularly popular story-demonstration, and achieves the difficult task of putting the important nutrition lessons into fresh form, adapting the figures from automobile manufacture, a modern and successful application of the earlier comparison of the body with the steam engine.

I have not even begun to tell the whole story of this somewhat unique piece of cooperation. The catalogue of the material furnished by the Council is listed under "Suggestions to Teachers Regarding Sources of Material," in this department.

The director of home economics in the public schools offers the most practical form of cooperation when she urges her teachers to work with the nutrition workers of the Council. The latter are all well known in the field, and include such specialists as Angeline V. Keenan, director of the Extension Division, Dr. Hannah Lyons and Aubyn Chinn.



The inside cover of a book of rhymes

Every Girl American Beauty Products

Editor's Note — By way of showing the broad scope of the cooperative projects carried on by the Philadelphia Inter-State Dairy Council we reproduce by permission its adaptation of some American Child Health Association material. "Happy's Vanity Case," published by the latter organization, was the inspiration for the following story-demonstration as carried out by the Council.

DEMONSTRATOR (a Council girl) — Step right up to the front to witness the most lovely creation of the age—an attractive American girl—(pause as good-looking girl enters)—unexcelled, yes, even unequalled by any other beauty of the countless ages past.

England's Dianas, vivacious French

mademoiselles, languorous, sloe-eyed Spanish senoritas fade before her—our American Girl, clear-eyed, rosy-cheeked, light of heart, her step swinging free—she stands supreme. For ah! she thinks less of lotions, powders, rouge and dyes, but more of food and sleep, fresh air and laugh-provoking exercise. She knows the contents of a cooking pot, can make complexions beautiful—or not!

List maidens:

A learned doctor once prescribed for a maiden's pallid cheeks—a box of rouge. But, said he, walk three miles out and bury it three feet deep, then each day tramp out to find if anything grows there. And before the moon had half made her round, she found the buried rose tint blooming on her cheek.

So, we take great pleasure in introducing to you the EVERY GIRL AMERICAN BEAUTY PRODUCTS.

1. **Creamed Kissed Carrots—rouge for the cheeks and lips** (present bunch of carrots).

No dressing table is complete without our Cream Kissed Carrots (Nature's paint brush). No matter how tender or beautiful your skin, you can use Cream Kissed Carrots with the utmost confidence.

Directions: Use Yellow Carrots cooked in White Milk twice a week for one month. By mixing these two colors within the body a permanent rose tint will appear on each cheek.

2. **Complexion Cream**—Essence of Oatmeal. A delightful combination of Golden Oats. This complexion cream should be served in a silver refill stick. When desirable, a few ounces of fresh or stewed fruit can be added to make the application of the cream more effective.

3. **Sleeping Potions.** Our method of sleeping, scented with pure sweet dreams, will eradicate wrinkles, give a permanent curve to the mouth, and to the eyes a constant glow.

Directions—Wash before applying.

Mix one ten-hour bed-ful with open window every night.

Do not expect results if used spasmodically. Persistence and regularity are essential to obtaining best results.

4. Our **Eau De Bain** or Water of Cleanliness (present basin or miniature tub).

Directions for using: Mix with pure soap in a shining white tub and apply with a clean cloth. A daily application is necessary for a fresh, sweet-smelling skin.

5. Our **Aqua Vitae**, Water of Life (present glass of water).

Springs bubbling through the sand, fountains tinkling over mossy stones, deep wells sunk in the cool earth, blue lakes, singing rivers. A shining water tap, a bubble fountain.

A lapping tongue, two cupped hands, a crystal goblet, from the beginning to the end, Aqua Vitae—Water of Life (for best results use at least four glasses a day).

6. **Our Skin Softener.** Why be pale and sallow when one of the most perfect beauty secrets of the ages hangs from the boughs of the nearest fruit tree? (Present apple.)

Our skin softener will remove mysterious and unsightly rashes from the face and help develop a soft, white skin. It is delivered in air-tight packages. Never destroy the wrapper. (It is learned from good authority that Venus won the golden apple of beauty because she ate an apple a day from the orchards on Mount Olympus.

7. **Our latest and most important product is Cow's Vanishing Cream**—The most exquisite beautifier ever discovered. Cow's Vanishing Cream is endorsed by Presidents, Heroes, Heroines, Generals, Athletes, Babies, et cetera.

Cow's Vanishing Cream will bring immediate relief to your tired body, firmness to your weary bones. It will give you a priceless jewelled smile, a double string of pearly teeth surrounded by ruby lips. We manufacture enough for every one to absorb four glasses each day. (If your grocer doesn't carry it, write your nearest cow.)

Lack of time prevents our demonstrating others of our EVERY GIRL AMERICAN BEAUTY PRODUCTS. Others not here described, but equally valuable, are as follows:

Complexion Powders, extracted from wholesome cereals, guaranteed equally well suited to blondes and brunettes.

Powder Puffs, made from fluffy baked potatoes.

Perfumes, squeezed from fresh, luscious fruits.

Eye Sparklers, made of phosphorus taken from tempting creamed onions.

Vanity Brushes, for the teeth.

Vanity Cases, in several shades of green, made of leafy vegetables. The spinach case is especially popular among business women. The daily lettuce case has been provided for the younger miss.

"Putting Pep in Your Motor"

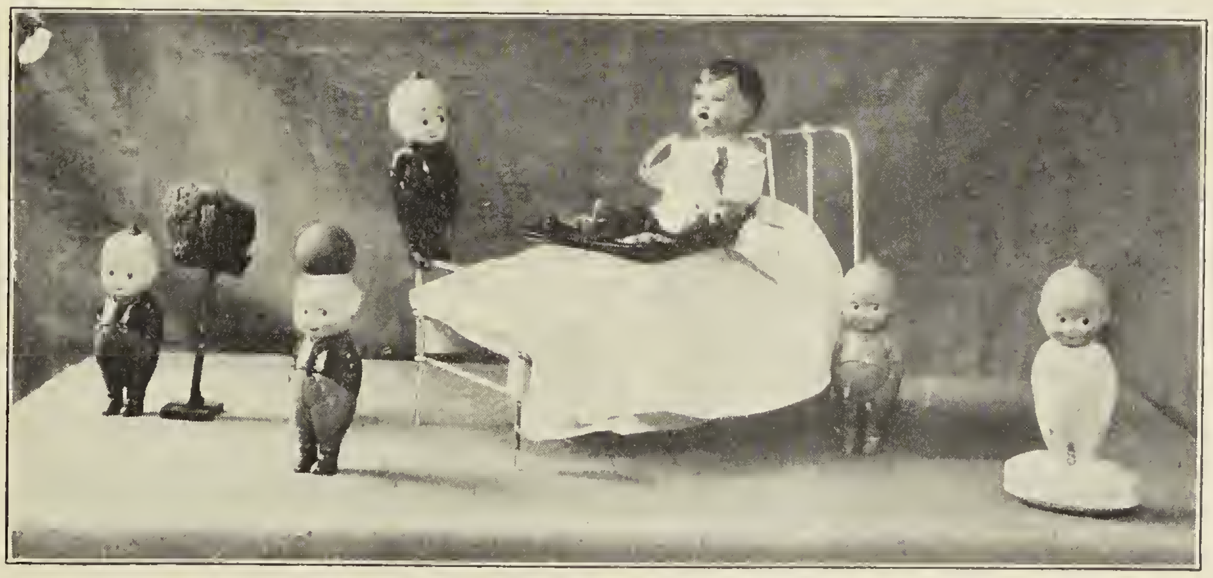
Vanity Scales, just as important as the mirror. Will reflect the height and weight of your beauty, and the beauty of your height and weight.

Our American Girl of beauty, charm and joy!

Why envy her? Her secrets are yours. Her beauty, her charm, her magnetism are yours for the asking.

Watch the mirror over your dining table instead of over your dressing table.

A second article, showing the relation of the Philadelphia Council to the National Council, will appear in the May issue. Further details of the dramatic program as carried out in Philadelphia and other cities will also be given.



David and the Good Health Elves
Illustrating an adaptation by the Philadelphia Council of a story published by the Wisconsin Anti-Tuberculosis Society

HANG ME IN THE KITCHEN

Iowa State College of Agriculture
and Mechanic Arts
Extension Service
R. K. Bliss, Director

A Simple Guide for Meal Planning

HAVE SOME FOOD FROM EACH GROUP IN EACH DAY'S MEALS

Energy-giving Foods			Body Building and Regulating Foods				Protective Foods		
			Muscle	Bone, Teeth and Regulating			Vitamins		
Starches	Sugars	Fats	Proteins	Lime or Calcium	Iron	Roughage	A	B	C
Breads Crackers Macaroni Rice Tapioca Sago Breakfast foods Other cereal products Potatoes Beans and Peas	Sugar Molasses Sirup Honey Preserves Jellies Dried fruits Candy Cake and Cookies Other desserts	Butter Cream Cheese Lard Salt pork Bacon Margarines Vegetable and Nut oils Peanut butter	Milk Eggs Cheese Lean meat Fish Beans Peas Nuts	Cheese Milk Buttermilk Cottage Cheese	Spinach Greens Molasses Bran Beans Egg yolks Lentils Whole cereals Prunes Dates Figs Raisins Red meat	Beans Peas Cabbage Turnips Squash Celery Asparagus Lettuce Spinach Onions Raisins Dates Prunes Apples Bran	Cream Butter Egg yolks Spinach and other green leaves Carrots Tomatoes Glandular organs Yellow corn Sweet potatoes Rutabagas	Germ of cereals Spinach Cabbage Beets Tomatoes Carrots Turnips Beans and other vegetables if water in which they are cooked is used.	Oranges Lemons Tomatoes Rhubarb Raw Cabbage Raw Turnips Raw Carrots Raw Rutabagas Raw Onions

Every person should drink from 6 to 8 glasses of water daily.

A suggestion for popularizing the knowledge required for successful meal planning. The tabulation is on a 6 by 8½ card, punched for filing. It is issued by the Extension Service of the Iowa State College of Agriculture and Mechanic Arts, of which R. K. Bliss is the director.

Nutrition News

The Monthly Letter by which Home Economics Teachers in San Francisco are Kept Informed

Editor's Note—As a suggestion to teachers engaged with the various problems connected with extra lunches for undernourished pupils we reprint the current issue of "Nutrition News," by means of which Ellen M. Bartlett, supervisor of Home Economics in the pupil schools of San Francisco, keeps her teachers informed of progress. A copy of this circular letter is enclosed each month in the financial reports sent by Miss Bartlett to each school. Teachers in other localities will find comments on several of the most perplexing phases of the lunch problem, such as the relation between free and paid lunches, tuberculosis and the extra lunch, or general health habits.

San Francisco Public Schools

Office of the Supervisor of Home Economics.

Report on the serving of mid-morning lunches, February, 1923

Number of schools serving mid-morning lunches	88
Average number of children served daily	9,813
Number of lunches served free during the month	14,017
Total number of lunches served	184,153

Our finances are in good condition, thanks to the care and efficiency of the teachers who collect the bread and milk money and supervise the lunches in each school.

We have, of course, a number of children in our schools who cannot pay five cents a day for a mid-morning lunch. The Rotary Club gives us fifty dollars a month for bread and milk, and this takes care of fifty children. Schools serving a large number of mid-morning lunches accumulate a surplus every month, and this is used by some schools to give free lunches to children who need them but could not otherwise get them. I have calculated that the profit on ten paid lunches will pay for one free lunch.

Again I will ask teachers to enclose signed vouchers for all purchases made for the mid-morning lunches.

There are sixteen schools in the poorer parts of San Francisco that are finding it hard to give free bread and milk to all who need it. One school serves thirty-five pupils free and can pay for only nineteen of these from its profits. It would be a kind deed if schools that do not have to give free servings to their pupils would offer to give five dollars a month out of their surplus to schools in less favored localities.

On a recent visit to Los Angeles, I learned that milk and cracker lunches at ten-thirty in the morning are being organized in the schools there. So far they are served only in schools in the poorer districts, and are given free, the movement being financed by several charities. There is a feeling, however, that many of the children who need milk most are quite able to pay for it. I have spoken to a great many mothers in San Francisco who are very grateful to the schools for the mid-morning lunches that their children buy.

Mrs. John Collier who was in charge of special health teaching in twelve of our schools last year, is preparing a series of articles on child health for the "Sunset Magazine." These articles will be written by the best known children's specialists of the Far West, and will be accompanied by statements of teachers telling in detail how they have presented health habit subjects to their pupils and aroused their interest.

The annual report of the San Francisco Tuberculosis Association for 1922 has just been received by my office. This report includes several accounts dealing with the work that the association is promoting in our schools. There is a report from Mrs. Hetherington on health teaching, another from Miss Lindsay on nutrition classes, and another from Miss Baker on research work done in the Daniel Webster School.

Mrs. Hetherington's report notes the fact that as malnutrition increases in the grades it shows that our school procedure has neglected the most important factor in life, health.

Miss Baker comments on the number of families where the mother is in industry and the family seldom has formal meals. A box of apples on the back porch or a saucepan of stew on the back of the stove, to be sampled when hungry, are poor substitutes for regular meals and proper table manners.

Miss Lindsay reports that in sixteen schools the Tuberculosis Association is subsidizing one of the teachers to supervise the health of all children 10 per cent or more underweight. She confers with these children every two weeks, keeps a graphic weight chart, and engages the cooperation of the grade teacher and the school nurse. The Board of Health is helping by having physical examinations made of all these children.

Among the good health habits that our pupils should acquire is the practice of washing hands before eating. It seems too bad that our older schools are so poorly equipped for hand washing, and that soap and paper towels are not available anywhere. Paper towels might be bought with "bread and milk" money, as they are a help to cleanliness and health.

Last week we had some photographs and health posters at the Child Health Week in Polk Hall, Civic Auditorium. Many parents expressed their appreciation of the school department's efforts along the line of health teaching.

ELLEN M. BARTLETT,
Supervisor of Home Economics.

Health Stories and Plays

Games in Story Form Which Have Been Used in Teaching Health to New York School Children

By MABEL M. ROSE

Teacher of Cooking, New York City Schools

Editor's Note—The following are part of a series of six stories and plays written and illustrated by Miss Rose, a teacher in the schools of New York City. The material has been accepted by the director of cooking in these schools, and we count ourselves fortunate in being able to present it thus early to our readers. Other stories will appear in an early issue.

ALTHOUGH the stories are chiefly instructive, the children derive much enjoyment from them. They emphasize health rules, nutrition facts and the right way to live. In writing them the children apply their knowledge of house economics; they are stimulated to think and decide on a word quickly, thus improving their vocabulary, and also they correlate their knowledge of English and composition. The stories supply a form of healthy competition.

The teacher explains to the class that she will tell the outline of a story to them and that they are to write the story and fill in with words whenever she pauses. Sometimes the class is asked to supply only one word, the teacher announcing "dash" for the blank space; sometimes the teacher announces two dashes or three, and the class supplies two or three words, as the case may be. Each story takes about ten or fifteen minutes.

At the close of the story the girls are called upon to read their finished stories. Discussions and suggestions are made by the class, which votes on the best story. The discussion is usually animated. The name of the winner is put on the board and her name sent to the class teacher. The difference in the finished stories is surprisingly large. They are not intended, of course, to be like the originals except in their general outline.

I tried out several original stories in this way and found them very successful and worth while.

The Gift of Happiness

(HEALTH RULES)

THIS is a story about a little orphan girl named Rosemary. She lived with her Aunt Marguerite and Aunt Marjorie in a beautiful castle by a wide flowing river. Her aunts were so devoted to her that they spoiled her and let her do just as she pleased. She was very careless in her appearance, her hair was stringy and untidy, her nails always dirty and her teeth from lack of care and from eating too many sweets were very ugly and discolored.

Aunt Marguerite loved to dress Rosemary in lovely soft dresses with dainty trimmings, but alas! almost as soon as Rosemary put on these lovely dresses they became soiled and even torn in long ugly rents, for Rosemary felt no pride in her appearance and took no care of her dainty clothes.

Instead of spending her days in study and happy out-door play with other girls, Rosemary often spent her days curled up in a big arm chair in the great library reading trashy books and nibbling sweets. Sometimes she would wander out into the gardens and pluck the choicest flowers and then throw them away into the large, clear lily pond. She used to lose her temper and cry with rage unless she could have her own way in everything.

One day when Rosemary was idly throwing flowers into the pond she had a great surprise. She saw standing on one of the big lily pads in the middle of the pond a little elf about a foot high dressed in bright orange. Suddenly he gave one leap from the lily pad and landed on the bank beside Rosemary, who was so startled she nearly fell into the pond. The little elf seized her by the arm and made her kneel down and gaze into the pond. "What do you see in the pond?" demanded the elf. For the first time in her life Rosemary saw herself as others saw her. "I see a very dirty, untidy little girl," she sobbed. "Now that your eyes are opened," said the elf, "I will give you a year in which to improve your appearance and your manners. During that year you will not be able to speak. I shall return a year from today and if you have done as I commanded you shall have your reward." He then handed her a large green leaf and, with one leap into the pond, disappeared. Rosemary examined the leaf eagerly. On it she found these rules for health and conduct:

Be kind to every one
Be obedient
Be unselfish
Exercise out of doors
Eat the right kind of food
Sleep nine hours each night
Take a daily bath
Brush your teeth three times a day
Take good care of your hair

Day after day little Rosemary, with Aunt Marguerite and Aunt Marjorie to help her, faithfully practised her health and conduct rules. When the year was up, early in the morning, Rosemary ran down to the edge of the pond, carrying her leaf of rules in her hand. At once the little elf appeared on the lily pad as before and then sprang beside Rosemary on the bank. "Kneel and look in the pond," he commanded, "tell me what you see." Now Rosemary was able to speak. "I see a very neat, happy little girl," she replied. "Yes and more," he answered, "a very attractive, winsome little girl who will win friends wherever she goes. You have now the reward I promised you; it is the gift of being happy and bringing happiness to others." So saying he tapped her lightly on the shoulder and then vanished into the pond.

Rosemary fairly flew up the long garden walk dancing with joy.

Then such fetes and feasts as took place at the castle to celebrate Rosemary's recovery!

All through her life Rosemary used her gift of happiness so well that she was happy herself and brought happiness to every one who was with her.

The Gift of Happiness

(As the outline was read to the children)

This is a ———— about a little orphan girl ———— Rosemary. She ———— ———— her Aunt ———— and Aunt ———— in a beautiful ———— by a ———— ———— river. Her aunts were so ———— to ———— that they spoiled ———— and ———— ———— do ———— ———— she ————. She was very ———— in her ————: her ———— was ———— and untidy, her nails ———— ———— and her ———— from lack ———— ———— and from ————too———— ———— were very ————and ————.

Aunt ———— loved ———— ———— Rosemary in ———— ———— dresses with ———— ————but alas! almost as———— ———— Rosemary put on ———— ———— ———— they became ———— and even ———— in long ———— ————, for Rosemary felt no ———— in her ———— and took no ———— of her ———— ————.

Instead of spending ———— ————in study and happy———— ———— with other ———— Rosemary often spent ———— ———— curled ———— in a ———— ————chair in the great ————reading ———— books and nibbling ————. Sometimes she would ———— out into ———— ———— and pluck ———— ———— flowers and then ———— ———— away in the large———— lily ————. She used to lose her ————and cry———— ———— unless she could have ———— ———— way in ————.

One day when Rosemary was idly ———— ————into the———— she had a ———— ————. She saw standing on ———— of the big ———— ———— in the middle of the ———— a little ———— about a ———— high dressed in ———— ————. Suddenly ———— gave ———— ———— from the ———— ———— and landed on the ———— beside ————, who was so ———— she nearly fell ———— ———— ————. The little elf seized her———— ———— ———— and made ———— kneel down and ———— into ———— ————. "What do you ———— ———— the pond?" ———— the elf. For the first ———— in her ———— Rosemary saw ———— as others ———— ————. "I see a very ———— ———— little girl," she sobbed. "Now that your ———— are opened," said the elf, "I will give you ———— ———— in which to improve ———— ————and your ————. During that ———— you will not be ———— to ————. I shall return ———— ————from today and if you have ———— as I have ———— you shall have ———— ————." He then handed her a ———— ———— leaf and with one ———— into the ———— disappeared. Rosemary examined ———— ———— eagerly, on it she found these rules for ———— and ————.

Be ———— to every one.
Be obedient.
Be ————.
Exercise ———— ————.
————.
Eat the ———— ————
———— ———— ——.
Sleep ———— ———— each
night.
Take a ———— ————.
Brush ———— ———— ————
———— times a day.
Take ———— ———— of
———— ————.

Day after day little Rosemary with Aunt ———— and Aunt ———— to ———— her, faithfully ———— her ————and———— ————. When the year ———— ————, early in the ———— Rosemary ran ———— ———— the ———— of the ————, carrying ———— ————of————in her————. At once the ———— ———— appeared on the ———— ———— as before and then ———— ———— Rosemary on the ————. "Kneel and look in ———— ————," he commanded. "Tell me what you ————." Now Rosemary was able ———— ————. "I see a———— ————happy———— ————," she replied. "Yes, and more," he answered, "A very ———— ———— little girl who ———— ———— ————wherever———— ————. You have ———— the reward I ———— you, it is the gift of being happy and bringing ———— to ————. So saying he tapped her ———— on the ———— and then ———— into the ————. Rosemary fairly ———— up the long ———— walk, dancing ———— ————.

Then such ———— and ———— took place at the ———— to celebrate ———— ————.

All through her ———— Rosemary used her ———— ———— ———— so well that she was happy herself and brought ———— to every ———— who ———— with her.

The Silver Rake

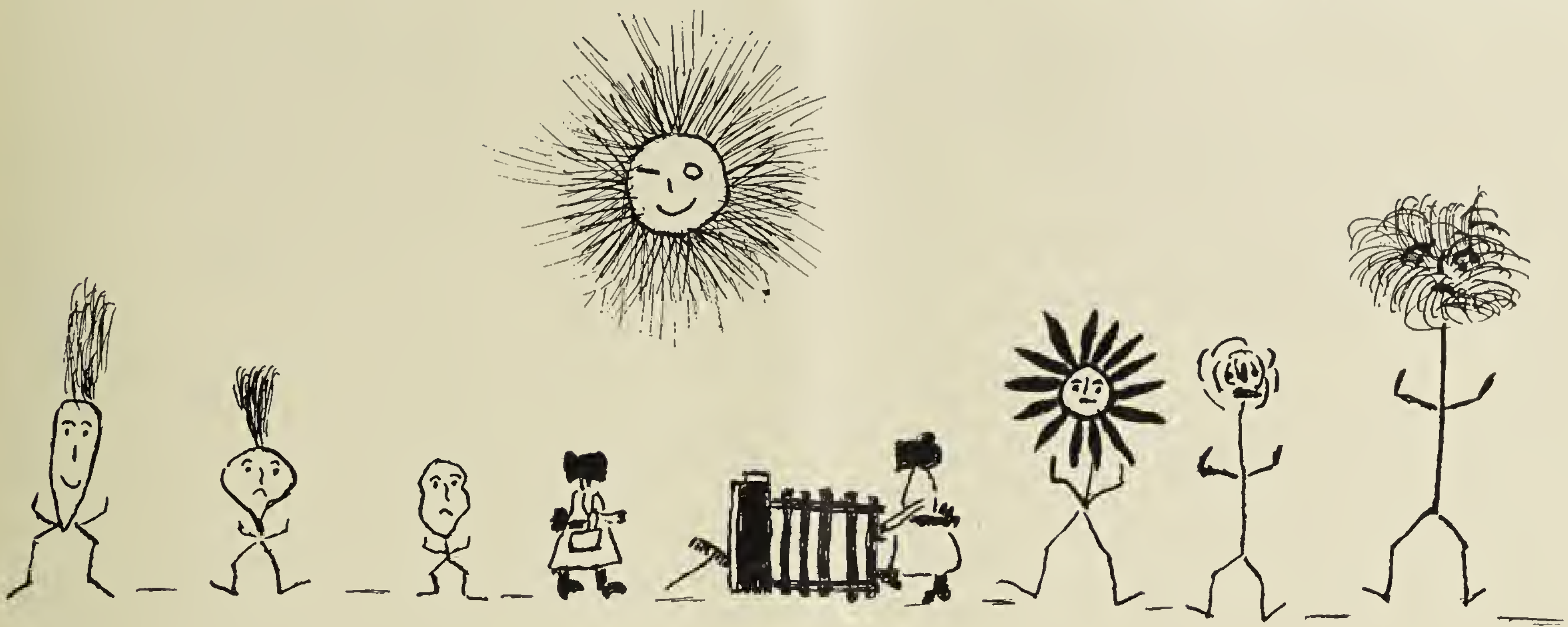
(Vitamines)

DO YOU know what fun it is to dig in a garden? This story is about two little girls who had their own gardens. Their names were Sarah and Rebecca. They lived side by side, but Rebecca's house was handsome and her garden was large and wide, while Sarah lived in a small cottage and her garden was small and narrow. Day after day the two little girls toiled in the sunshine, planting, hoeing, and weeding. Every now and then they would stop and chat together over the low brick wall which divided their gardens. Rebecca's garden had been planted with large, showy flowers. In Sarah's garden were planted only vegetables, spinach, lettuce, cabbage and carrots. All through the spring the two little girls worked happily in their gardens until Rebecca's garden began to bloom into beautiful flowers. Then poor little Sarah began to feel discouraged for her garden produced only green leaves and stems and no beautiful blossoms. Rebecca used to lean on the brick wall and make fun of Sarah's garden, which made Sarah very unhappy.

One lazy, drowsy summer day, when the bees were humming and the air was heavy with the scent of green grass and flowers, both little girls were busy as usual working in their gardens.

Suddenly they heard the tinkle of bells, and looking up they saw perched on the wall a quaint little fairy in a dress trimmed with hundreds of little silver bells which jingled and jangled as she moved. In her hands she carried a silver rake.

The little girls ran to the wall and stood spellbound, gazing at the dear



little fairy. The fairy said, "I am called Tinkle and I have come to reward the little girl whose garden will bring the most happiness to others." Then Rebecca eagerly showed the fairy her garden, with all its big, beautiful blossoms and told her how she picked them and decorated her house with them. "Do you send some to the sick and poor?" asked Tinkle. Rebecca drooped her head. She had only thought of her own house. Sarah told the fairy that she took her market basket full of vegetables every day and sold them to the poor for only a few pennies. Tinkle smiled at Sarah and said, "Little Sarah, you are doing much good with your garden, for with your spinach, lettuce and cabbages you are giving to the poor the Growth Giving Vitamine which is necessary for health. To you belongs the silver rake." She handed the rake to Sarah and then in a moment had vanished.

That rake was the most wonderful rake in the world. Every time Sarah used it to rake her garden the vegetables grew into the finest, juciest vegetables in all the land so that Sarah's vegetables became known as the Famous Finest Freshest Vegetables in all the world.

THE SILVER RAKE

Do you know what fun it is to dig in a garden? This —— is about two little girls who had —— ——. Their names were Sarah and Rebecca. They —— side —— —— but Rebecca's house was handsome and her garden was large ——, while Sarah lived —— —— small —— and her —— was ——and——. Day after —— the two —— —— toiled —— —— ——, planting, —— and ——. Every now and then they would stop and —— —— over the low —— —— which —— their gardens, Rebecca's garden had —— —— with —— —— flowers. In Sarah's garden were planted only vegetables, spinach, ——, —— and carrots. All through the —— the two little girls —— —— in their —— until Rebecca's —— began to —— into —— —— then poor little Sarah began —— ——discouraged for her—— produced only green —— and —— and no beautiful ——. Rebecca used to lean on the —— —— and make fun of Sarah's —— which made Sarah —— ——.

One lazy —— —— day when the bees —— —— and the air was —— with the scent of—— ——and—— both little —— were busy —— ——working—— —— ——. Suddenly they heard the —— of bells and looking up they——perched—— —— . —— a quaint little —— in a dress trimmed with —— —— —— silver bells which jingled and —— as she ——, in her hands she —— a silver rake.

The little girls ran —— —— —— and stood —— gazing at the —— —— fairy. The fairy said, "I am called Tinkle and I have come to —— the little —— whose —— will bring the most —— to others." Then Rebecca eagerly showed —— —— her —— with all its —— —— blossoms —— and told her how she —— them and decorated her —— —— ——. "Do you—— —— to the sick —— ——?" asked Tinkle. Rebecca drooped —— ——, she had only —— of her own ——. Sarah —— the —— that she took her —— —— full of —— every day and —— —— to the —— for only a —— ——. Tinkle—— at Sarah and said, "Little Sarah, you are doing —— —— with your——for with your——, lettuce and —— you are giving to the —— the growth giving ——which is necessary—— ——to you belongs the—— ——." She handed —— —— to Sarah and then in a —— had ——.

That rake was the most —— —— in the ——. Every time Sarah used it—— —— her —— the —— grew into the finest —— —— in all the land so that Sarah's vegetables became —— as the F—— F—— F—— vegetables in all the world.

The Careful Cow

By WINIFRED STUART GIBBS

After R. L. S.

The careful cow tries very hard
  To eat of food the best,
She likes to be kept neat and clean,
  She likes to take her rest:

Bcause she knows her nice fresh milk
  Gives strength to children dear,
She likes to make them happy,
  And fill their hearts with cheer.

A List of Books for Home Economics Workers

Bibliography Issued by the Department of Vocational Education of Missouri

THIS suggestive bibliography of books of interest to home economics teachers is adapted from a list of reading matter issued by Sam A. Baker, executive officer and director of the Department of Vocational Education of the State of Missouri. Any of the books listed may be obtained postpaid by writing to Food and Health Education, The American Food Journal, 37 West Thirty-ninth Street, New York City.

Texts

School and Home Cooking, Greer, Allyn & Bacon.

Foods and Sanitation, Forster and Weigley, Row, Peterson & Company.

Food Study, Wellman, Little, Brown & Company.

Domestic Science, Austin, Lyons & Carnahan.

Food and Its Preparation, Dowd & Jameson, Jno. Wiley & Sons.

Reference Books

Feeding the Family,* Mary S. Rose, Macmillan Company.

Laboratory Handbook of Dietetics, Mary S. Rose, Macmillan Company.

Food Products,* Sherman, Macmillan Company.

Chemistry of Foods and Nutrition, Sherman, Macmillan Company.

Dietetics for High Schools, Willard & Gillett, Macmillan Company.

Pure Food, Olsen, Ginn & Company.

Human Foods,* Snyder, Macmillan Company.

Foods and Household Management, Kinne & Cooley, Macmillan Company.

Fireless Cook Book, Mitchell.

The Science of Home Making, Pirie, Scott Forsman & Company.

How the World Is Fed, Carpenter, American Book Company.

Food Industries, Vulte and Vanderbilt, Chemical Publishing Company.

How We Are Fed, Chamberlain, Macmillan Company.

The Worlds Commercial Food Products, Ginn & Company.

Milk and Its Products, Wing, Macmillan Company.

Economy in Food, Wellman, Little, Brown & Company.

Use and Preparation of Food, Federal Board for Vocational Education.

Successful Canning and Preserving, Powell, J. B. Lippincott & Company.

Boston Cooking School Book,* Farmer, Little, Brown & Company.

An Adequate Diet, Stiles, Harvard University Press.

Fundamental Basis of Nutrition, Lusk, Yale University Press.

Home and Farm Food Preparation, Cruess, Macmillan Company.

Bacteria, Yeasts and Molds, Conn, Ginn & Company.

Table Service, Allen, Little, Brown & Company.

The Cost of Food, Richards, Jno. Wiley & Sons.

Home Dietetics, American Red Cross, Washington, D. C.

Foods and Cookery, Matteson and Newlands, Macmillan Company.

Dietetics in Health and Disease, A. F. Pattie, Mt. Vernon, N. Y.

Nutritional Physiology, Stiles, W. B. Saunders & Company.

The American Home Diet, Conn, Ginn & Company.

The American Home Diet, McCollen and Simonds, Fred C. Matthews, Detroit.

General Science

Science of Every-day Life, Van Buskirk and Smith, Houghton Mifflin Company.

Science of Home and Community, Trafton, Macmillan Company.

General Science, Caldwell Eisenberry, Ginn & Company.

Elements of General Science, Laboratory Problems, Caldwell, Eisenberry, and Glenn, Ginn & Company.

First Course in General Science, Barber, Holt & Company.

Introduction to Science.* Clark, American Book Company.

Physiology, Hygiene and Sanitation.

Bacteria, Yeasts and Molds,* Conn, Ginn & Company.

Advanced Physiology and Hygiene, Conn and Budington, Silver, Burdette Company.

First Book of Health, Hartmann and Bibb, World Book Company.

The Human Body and Its Enemies, Hartman and Bibb, World Book Company.

Gulick Health Series, Ginn & Company.

Household Bacteriology, Buchanan, Macmillan Company.

Primer of Sanitation, Ritchie, World Book Company.

Home and Community Hygiene, Broadhurst, J. B. Lippincott & Company.

Civics and Health, Allen, Ginn & Company.

Health First, Chapin, Century Company.

House Sanitation,* Talbot, Whitcomb & Barrows.

Practical Physiology, Blaisdell, Ginn & Company.

Hygiene, Galbraith, W. B. Saunders Company.

Biology

Civic Biology,* Hunter, American Book Company.

Laboratory Problems of Civic Biology, Hunter, American Book Company.

Elementary Biology, Gruenberg, Ginn & Company.

Manual to Elementary Biology, Gruenberg, Ginn & Company.

Nature Study and Life, Hodge, Ginn & Company.

Beginner's Garden Book, French, Macmillan Company.

Physiology, Richey

Physics

Physics of the Household,* Lynde, Macmillan Company.

Household Physics, Butter, Whitcomb & Barrows.

Physics and Chemistry for Nurses, Pope, G. P. Putnam's Sons.

Mechanics of the Household, Keene, McGraw Hill Book Company.

Chemistry

Household Chemistry,* Snell, Macmillan Company.

Chemistry of the Household, Weed, American Book Company.

Chemistry of Common Things, Brownlee, Allyn & Bacon.

Chemistry in Daily Life, Lassar-Cohn, J. B. Lippincott & Company.

Elementary Applied Chemistry, Allyn, Ginn & Company.

Chemistry of Food and Nutrition,* Sherman, Macmillan Company.

Chemistry of the Household,* Dodd, American School of Home Economics.

Everyday Science, Vivian, Holt & Company.

A Practical Chemistry for Home Economics Students, Cook, Appleton & Company.

Foods and Household Management, Kinne and Cooley, Macmillan Company.

Household Engineering,* Frederick, American School of Home Economics.

Increasing Home Efficiency, Bruere, Macmillan Company.

The Home and the Family, Kinne and Cooley, Macmillan Company.

The Home, Gilman.

Housewifery,* Balderston, J. B. Lippincott & Company.

Household Accounts,* Shaeffer, Jno. Wiley & Sons.

Cost of Living, Richards, Jno. Wiley & Sons.

Household Management,* Terrill, American School of Home Economics.

Manual of Home Making, Van Rensselaer, Macmillan Company.

Standards of Living, Chapin, Columbia University.

Home and Community Hygiene, Broadhurst, J. B. Lippincott & Company.

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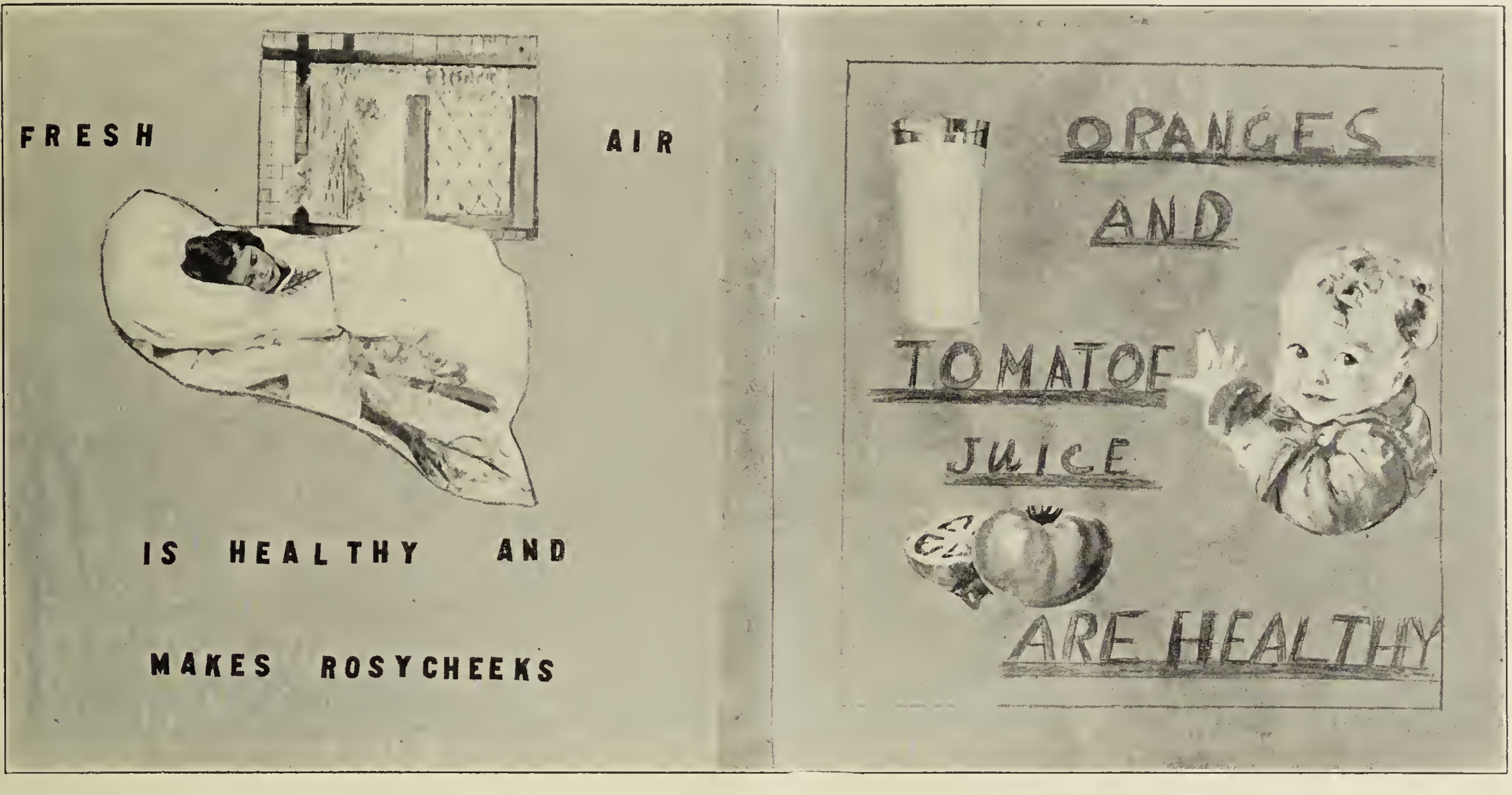
* Indicates minimum.



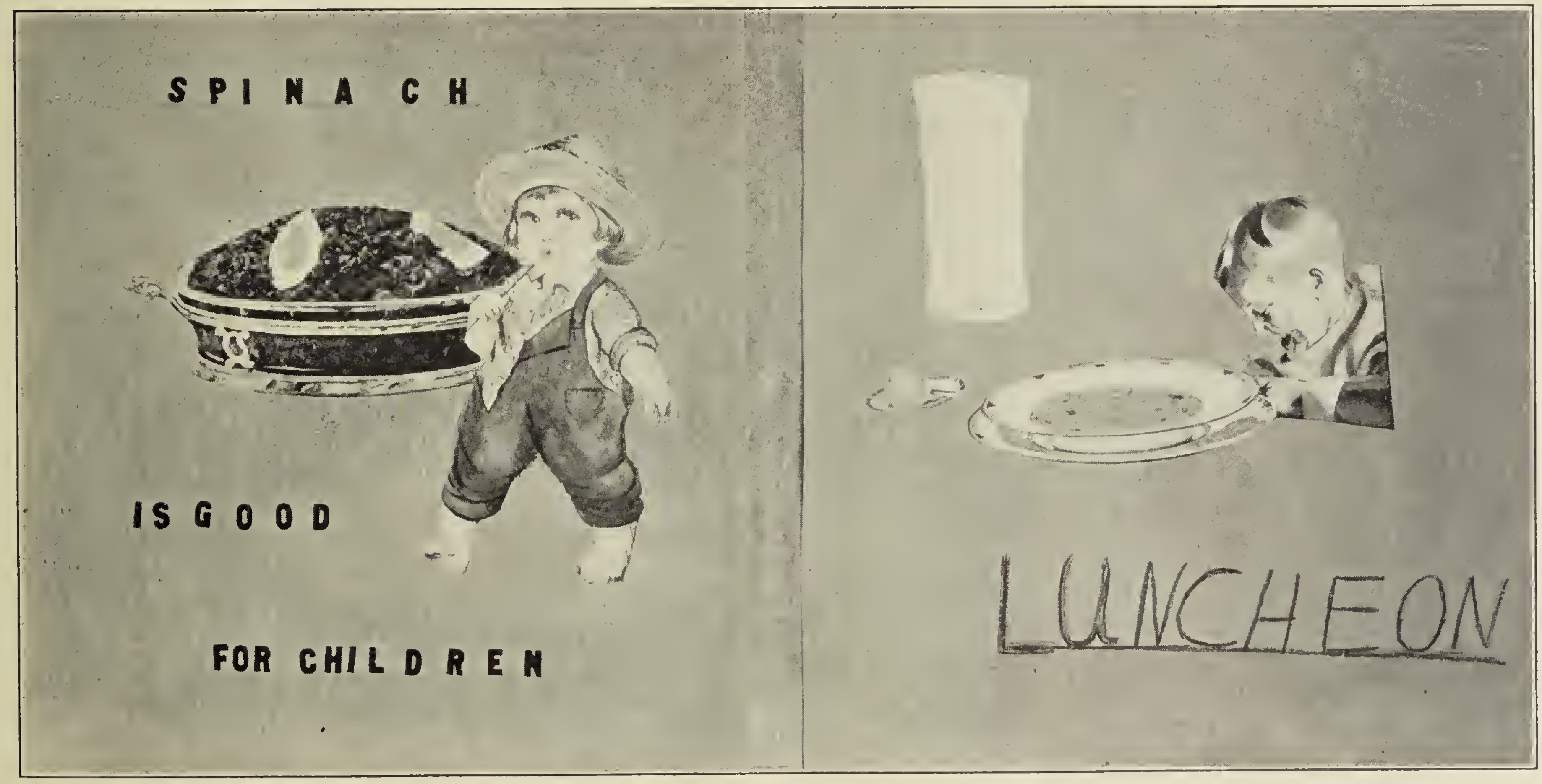
A Poster Club to Teach Nutrition Lessons

By GERTRUDE PREISCHE

Supervisor of Nutrition Bureau, Mulberry Health Center, New York Association for Improving the Condition of the Poor

Editor's Note—The nutrition work of philanthropic organizations is closely allied to that of the schools, since visitors at neighborhood houses are usually from families who are also represented at the schools. The following paper from the Nutrition Bureau of the New York Association for Improving the Condition of the Poor is offered as a suggestion both to our nutrition workers in neighborhood houses and to class room teachers who include among their pupils children from districts similar to that served by Mulberry Health Center.

IN nutrition as in other fields we are continually looking for new ideas to stimulate interest in good nutrition and simple living. This has been done to some extent through nutrition classes, "Little Mothers" classes, and groups of mothers. Last fall a new group presented itself, which we have called the "Poster Club." The Mulberry Community House as one of its recreational activities had a scrap book club to which about a dozen children came regularly each week and spent a happy hour pasting pictures in note books. It seemed possible, both to the leader of the club and to us, to make the group have a real purpose by emphasizing food and health and we there-



Combat this Great Evil

Do you know what a serious menace malnutrition is? Actual figures are alarming. 6,000,000 undernourished school children right here in our own prosperous United States!

These malnourished children present a problem in which the teacher is vitally concerned. Malnutrition in school children is a foe to every teacher. Your children cannot do credit to your teaching if they are not physically fit.

Any teacher can have an important influence on the health life of her children — more so even than parents — if she will.

Start a Health and Nutrition Class

Correct food and careful attention to health habits will overcome malnutrition in time. By starting health and nutrition classes in your own school you can accomplish a great deal.

The Nutrition Department of the Borden Company will be glad to furnish you with material and help you get your classes started. More than 500 malnourished school children have come directly under the observation of the field workers of this department during the past year.

The Nutrition Department has proved by exact and scientific experiments that Borden's Eagle Brand Condensed Milk is extremely beneficial in the treatment of this dangerous condition in children.

Eagle Brand is pure whole cow's milk combined with cane sugar. It is exceptionally rich in energy producing food; it contains elements essential to health and growth. Feeding experiments show that children fed on it gained as well as those fed on ordinary bottled milk. They showed decided improvement in every way, especially in appearance and progress in school.

The material collected by the Nutrition Department in these experiments, as well as an outline of the lessons used by Borden nutrition workers themselves will be placed at your disposal free of charge. Just write to the Nutrition Director, Borden Company, Borden Bldg., New York and she will advise you. Or if you wish health literature check the following list and mail it to her.

The Borden Company,
Borden Bldg., New York, N. Y.

Please send me the literature checked.

....20 Suggestive Lessons for Nutrition Classes
....An Interesting Experiment with Malnourished Children
....The Adolescent Girl
....Keeping Your Child Fit
....Menus for Little People
....Johnnie's Adventures with the Milkarpies
....The First Milkarpies
....Height and Weight Charts
....Health Records.

Name ____________________

Address

fore offered a nutrition worker to supervise the work.

The group is made up of girls between the ages of ten and fourteen years. They meet once each week for one and a half hours, and during that time they paste pictures of healthy children, healthful foods and good health rules on brown paper. As the children in this community do not have magazines in their homes our staff and our friends, who are on the lookout for suitable pictures, keep the class supplied. The background of the poster itself is a heavy, light brown wrapping paper or wall paper obtained from old sample books. The wall paper is interesting to the children but it is not very practical because it tears easily. Our aim is to have the picture express the idea with as little writing as possible. For this purpose black gummed letters are used which are neat and easily handled by the children. The poster class is a very inexpensive type of group work. The cost of materials is little.

The nutrition worker gives a short health talk at each meeting, and then, as she is guiding each child in the making of her poster, she gives individual instruction. Although the instructor helps in the selection of proper pictures and the expression of ideas, each poster is the original product of the child. The health rules and value of the foods are discussed with each child so that all will learn correct health habits.

The children are fascinated and come eagerly. Often a group of five or six children right from school arrive twenty minutes before club time and stand in the hall, waiting. On espying their instructor they call into the office, "Miss C—, we're here!"

The services of the club are manyfold. Not only do the children get a recreational hour and an opportunity to learn good habits, but they are helping us by supplying posters for practically all our needs. In our community health work posters are used extensively. Formerly, these were made by the workers; but this was a time-consuming process. Thus the new method is proving a great saving of time. The posters are used by the Health Center in its group work, in the medical clinics, in schools, in stores, and some are loaned to other organizations.

As a part of our plan in getting storekeepers interested in the community's health, the children and the nutrition workers have been providing food posters to them to place in their windows. These have been received with much interest, and some of the men have asked for more. One dealer told us his sales of milk had doubled since the milk poster had been tacked above the milk box. Another said he had previously sold little cereal, but on exposing to view a poster emphasizing oatmeal, he sold one case of oatmeal each week. He has also added bran as a saleable product. One man was especially interested in what the nutrition worker had to say, and offered to get bran, or anything we emphasized, if we would supply a poster urging people to buy them. At our suggestion he said he would add bran muffins and fruit to a luncheon of milk, crackers, and cake which he serves to a few people, if we would supply posters emphasizing them.

At present there are also about thirty of our posters in the schools. The principal of one of these schools asked us for them. She planned to have a different poster in each class room with the poster rotating weekly from one room to another. Our plan is to lend for a week at a time in rotation as many posters as possible to schools, clinics, and stores.

The work of this class seems to be very far-reaching with a comparatively small expenditure of time and energy of a regular worker, who spends an average of two hours a week on preparation and class work. It also gives the children a splendid opportunity to be of help in their own community.

Home Economics Clubs for High School Girls

The excellent work being done by the Home Economics Clubs of Missouri, under the direction of the Vocational Department of the Missouri State Department of Education, is an outgrowth of the following recommendations, made by a special committee appointed in the autumn in 1922, to organize home economics work. The members of this committee were: Hazel Major, Florida Parsons, Lola Barnett, Helen Johnson, Floy Joslyn and Fay Samuel.

In organizing home economics clubs in connection with our departments it is vitally necessary for us to analyze the purposes of such an organization. First, we have to know the specific needs of high school girls and how our club can best meet these needs. In our classes in school we attempt to teach our girls the value of work and the value of knowledge and skill in their various undertakings; but there is a need of these high school girls which perhaps is more paramount or at least more immediate than the need of knowledge, and that is the providing of wholesome, instructive recreation for them. This need is not adequately met by mothers or by the communities in most places. What mothers are willing to go with their girls on hikes and picnics or are even willing to provide amusements for the girls while they are at home? Another aim of the home economics club is to be of direct assistance to the department. In our class work, during the limited amount of time which is allotted for each subject, it is impossible to develop to the fullest extent each topic which is discussed, so the club can supplement the class-room instruction. Such an organization, by having sales and other money-making schemes, can provide the department with needed equipment. It can provide funds for paying the expenses of representatives to the state home economics contests.

Not only can the club be of assistance to the department but to the entire school as well. The girls would be rendering a great service to the school by serving hot lunches at noon. They also help in school campaigns.

Besides helping the school and the department, the main benefits derived from such an organization come in helping the individual girl. Our schools tend to develop selfishness in the students. Each student tries to surpass the others in grades and in popularity. Club work, to a certain extent, should counteract this evil because the club teaches the value of working in groups, thus training our girls to become efficient members of society.

When working with high school girls there are many difficulties which we have to overcome and we must realize that it is only by persistent effort that work with girls can have the recognition which it deserves. How many schools had mass meetings before these girls came to Columbia to let them know they were interested in the things which the girls were attempting to do? While for every football game—it makes no difference how many they have a week—there is always a meeting called to arouse in the boys a fighting spirit.

When a home economics club is first organized, the work is just begun, and it is the teacher's duty to see that the thing is put across and that interest never lags. The girls must be made to feel that it is their organization, and that they are responsible for its success.

If we just reach the girl we are not accomplishing as much as if we go still farther and get the home back of the girl. Why not organize a mother's auxiliary branch to our club and have the mothers plan definite programs to carry out plans of work? In this way we could be of great assistance to the mothers and they could be of equal assistance to us. Just one lone club can accomplish great things if it tries, but how much more could it accomplish if it were backed by some state or national organization? Some of the home economics clubs in this state are affiliated with the Women's Federation of Clubs of Missouri and from them they get valuable help. It is a good idea to have the club meetings open to all the school once in a while to get the entire school interested in the things which we are trying to do.

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Chubby Children and How to Grow Them

By WINIFRED STUART GIBBS

Mama Glum gave Papa Glum his hat and saw him off to work.

She looked at the clock.

"My goodness, it's half-past seven!" she said. "Molly'll be late for school. Molly! Molle-e-e!"

Molly came running into the room, tying up her hair ribbon.

"Molly," said Mama Glum, "you'll just have to make out a meal the best way you can. It's late and I haven't time to fuss over you. Here's something left from your papa's breakfast."

This is what Molly had:

Two Doughnuts
A cup of Coffee

Molly barely took time to sit down to the table, she ate so fast.

Then she hustled off to school, calling for her best friend, Susie Gay, on the way.

* * *

Just across the street from the Glum house lived Mr. and Mrs. Gay and their daughter, Susie.

At half-past seven Mama Gay gave Papa Gay his hat and he went off to work.

Susie was still sitting at the table eating her breakfast.

Mama Gay had given Papa Gay bacon and eggs and coffee, but for Susie, remembering that she was just a child with a child's digestion, she had provided something different. This is what Susie was eating:

Stewed Prunes, Oatmeal
Crisp Toast, Milk

Susie heard her best friend, Molly Glum, calling her as she started for school.

She kissed her mother good-bye and ran off.

* * *

Molly and Susie both had the same teacher and liked her very much. They studied hard and did everything they could to please her.

Susie, however, stood better in class than Molly did, try as Molly might.

The first part of the morning Molly felt just like working. Lessons were interesting and it was easy to put her mind on her work.

Then she got tired and restless, and her teacher would have to speak to her about wiggling so much and not keeping her attention on the lesson.

She not only behaved badly herself but she disturbed the other children.

After the school lunch Molly generally felt better.

This is what the Lunch-Lady gave Molly and Susie for lunch:

Rice Soup, Bread and Butter
Stewed Rhubarb, Cocoa

* * *

"Pa," said Mrs. Glum to Mr. Glum that night at dinner, "it strikes me that Molly isn't looking as well as she ought to."

"She's at the growing age," said Papa Glum. "All children are thin when they are growing."

"Susie Gay is just Molly's age," answered Mama Glum, "and she's fat and rosy."

"Molly takes after me," said Papa Glum. "I was thin at her age. Here, Molly, pass your plate for your dinner."

This is what was piled on Molly's plate:

Pork Chop, Fried Potatoes
Hot Rolls and butter
Apple Pie, Coffee

Over the way, Susie Gay was having her plate filled. What she was getting was slightly different from what Papa and Mama Gay were having. This is what Susie was eating.

Broiled Meat Cake, Baked Potato
Creamed Carrots, Bread and Butter
Bread Pudding and Milk

* * *

Next morning Molly made her usual hasty breakfast and Susie and she ran off to school.

Her mother followed her to the front door to watch her go. Molly was certainly thin and pale. Mama Glum couldn't help being worried about her.

Meanwhile Mama Gay was watching Susie. The two women met over Mrs. Glum's front fence.

"How do you keep your Susie looking so well and hearty?" asked Mrs. Glum. "My daughter is getting thinner and thinner."

"Children at the growing age need to go to bed early and sleep with the windows open. They need just the right kind of food also," answered Mrs. Gay. "I'm careful to give Susie for breakfast the right balance of fruit and cereal and milk, and plenty of each, and so far I haven't had to worry."

"This is what I gave Susie this morning:

"Apple Sauce, Cream of Wheat
Toast and Milk."

* * *

"Molly," said the Teacher that day, "whatever is the matter with you? You and Susie were doing equally good work, and now Susie is ahead of you. You can do just as well in your lessons as Susie, if you try."

"And you used to behave just as well as Susie. I never had to speak to you about paying attention. Now everything I say goes in one ear and out the other!"

Molly liked her Teacher and what her Teacher said hurt her feelings very much. But try as she might, she couldn't seem to improve.

"That child is undernourished," said the Lunch-Lady to Teacher at noon. "I had an especially good lunch for the children today and you should have seen how hungry Molly was."

"This is what I gave the children:

"Fresh Vegetable Soup, Crackers
Bread and Butter
Baked Custard, Milk to Drink."

* * *

Molly slid into her chair at dinner that night looking so glum that even her father noticed it.

"What's the matter with that child?" said he to Mrs. Glum.

"That's just what Teacher's saying," said Molly, beginning to cry. "She says I'm heedless and don't pay attention and she says I used to be as good in my lessons as Susie and now I'm way behind her. I don't want any dinner," and she ran away from the table.

"It isn't natural for a child not to want to eat," Mrs. Glum said. "I'm going to call up the doctor and ask him to step over. Perhaps she needs a tonic."

Meanwhile Susie Gay was chattering about school to Papa and Mama Gay

The Glums

Molly

At Lunch

Susie

Dr. Wise

Domestic Science Teachers

WILL FIND

"OUR FAMILY FOOD"

very helpful in their classroom work. It is used by the following newspapers:

Atlantic City, N. J., Press Union
Arizona Gazette, Phoenix
Beaumont, Tex., News
Binghamton, N. Y., Morning Sun
Brooklyn, N. Y., Chat
Bridgeport, Conn., Post Telegram
Buffalo, N. Y., Evening News
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Columbia, S. C., State
Dallas, Tex., Times Herald
Detroit, Mich., Free Press
Fall River, Mass., Evening Herald
Ft. Smith, Ark., Southwest American
Gloversville, N. Y., Leader Republican
Hartford, Conn., Courant
Jersey City, N. J., Journal
Lawrence, Kan., Daily Journal
Los Angeles, Cal., Times
Muncie, Ind., Evening Press
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Paterson, N. J., Press Guardian
Portland, Me., Press Herald
Racine, Wis., Journal World
Rochester, N. Y., Democrat and Chronicle
Rockford, Ill., Morning Star
Saginaw, Mich., Evening Star
San Antonio, Tex., Light
Santa Rosa, Cal., Republican
St. Paul, Minn., Dispatch
Utica, N. Y., Daily Press
Winston-Salem, N. C., Sentinel

If your favorite newspaper does not publish this material, send to us for a sample. If you will call it to the attention of the editor of your paper he will probably be glad to co-operate with you in using it to spread in your community information on better nutrition.

THE AMERICAN FOOD JOURNAL
37 WEST 39th STREET
New York City

In Dietetic Practice—

EMINENT authorities find Knox Sparkling Gelatine one of the most important foods, because—

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2. It is easily digested.
3. It has high dietetic value.
4. It is an ideal conveyor of other nutritious foods.
5. It enables the dietitian to combine with it an infinite variety of attractive foods.
6. It is recognized as the standard of purity.

As an illustration of how Knox Sparkling Gelatine may be combined with fruit juices, try this tempting recipe for a Pineapple Jelly.

Pineapple Jelly

1 envelope Knox Sparkling Gelatine
2 cups cold water
1½ cups pineapple juice (scalded)
2 tablespoons lemon juice, ¾ cup sugar

Soak gelatine in one cup cold water five minutes Heat pineapple juice, mixed with remaining water, to boiling point and pour over soaked gelatine; then add sugar and lemon juice. Turn into a mold dipped in cold water, and when beginning to set, mold in slices of cooked pineapple, or any other fruits in season.

Note—Fresh pineapple fruit or juice must first be scalded or the jelly will not harden.

KNOX
SPARKLING
GELATINE

will be supplied any Domestic Science Teacher for classroom work, if she will write on school stationery, stating quantity and when needed.

Other Delicious Recipes—Free

In Mrs. Knox's books "Dainty Desserts" and "Food Economy" there are over 150 recipes for all kinds of exquisite desserts, salads, meat and fish loaves, candies, etc. Write for these free books, enclosing 4 cents to cover postage.

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GELATINE
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The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

and eating every bit of a dinner of:

Coddled Eggs, Mashed Potatoes
Fresh String Beans
Junket, Bread and Butter, Milk

* * *

The next day after school the Teacher went to call on Mrs. Glum.

"I've come to talk about Molly," she said.

Mrs. Glum was worried.

"Hasn't she been behaving well?" she asked.

"She doesn't seem to take any interest in her lessons," said the Teacher, "and she is falling behind the rest of the class. I don't like to tell you this, Mrs. Glum, but if she keeps on at this rate, I'm afraid she won't be promoted at the end of the year. I've spoken to her several times and each time she has promised to do better, but she hasnt shown improvement. Do you know what the matter is?"

Mrs. Glum grew more and more worried. She knew how proud Mr. Glum was of Molly and how he would feel if she were not promoted. She knew how Molly would feel if she had to stay back in the same grade and could not go on with Susie Gay and her other friends. And she could not guess what the trouble was—Molly had always seemed so anxious to please the Teacher and to stand well.

"No, I don't know what the matter is," said Mrs. Glum, "but I'll speak to Molly about it. She isn't sick, I'm sure, although she has a little cough sometimes, but her cheeks are pink."

The more she thought about Teacher's visit, the more worried she grew. WAS that cough serious?

* * *

Mrs. Glum watched Molly closely for several days after her conversation with Teacher. Molly seldom went to bed early and seemed tired when she got up in the morning. Toward the end of that next week the little girl's spirits seemed to droop, and one day she came in from school, crying.

"Whatever is the matter, Molly?" said her mother.

Molly could only gulp and sob, but finally her mother made out a few words.

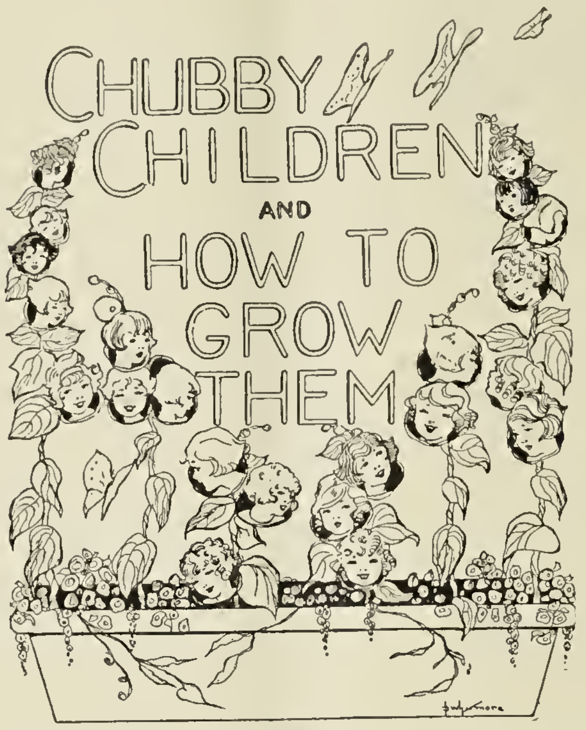
"Teacher is going to have a play in school, an' I can't be in it, because she said I was too tired and pale and thin. An' then we went to be weighed, and I was twelve pounds under weight, an' the school nurse said she wanted to see you right away."

More sobs, and then Mrs. Glum gathered Molly in her arms, saying, "We'll go right over to the school, and never mind about the play. We'll go to the movies every night this week and that will make you forget your disappointment."

They did go to the school, and after greeting Molly with a smile, the school nurse took Mrs. Glum aside and said gravely, "I don't wish to frighten you, Mrs. Glum, and cannot say anything until Molly has seen the school doctor, but she needs attention. Come with me to Dr. Wise's office."

Dr. Wise listened at Molly's chest, and tapped and tapped at her lungs, and then said,

"I may as well tell you, Mrs. Glum, that Molly has a spot on one lung, and unless we take it in time she will have tuberculosis. She is very pale. She is undernourished. WHAT HAVE YOU BEEN FEEDING HER?"


CHUBBY CHILDREN AND HOW TO GROW THEM

"Well," said Mrs. Glum, hesitatingly, "she hasn't been having very substantial breakfasts, I'm afraid. But she is always so anxious to get to school on time that she won't take time to eat. She has the school lunch, of course. For dinner I'm giving her just what her father and I have—"

"Roasts and hot breads and heavy desserts?" asked Dr. Wise. "That's just what I thought! Don't you know, Mrs. Glum, that Molly hasn't a grown up stomach and should have only the most easily digested food, with plenty of vegetables and cooked fruit and milk, and none but the simplest desserts?

"Your daughter has been starving!" continued Dr. Wise. "I'm not surprised that she is tuberculous. Her system was not strong enough to throw off the infection! Also she has not had enough sleep and has not had enough fresh air in her bedroom."

Mrs. Glum thought she had heard something like this before from Mrs. Gay. She thought of Susie Gay with her rosy cheeks and her good marks in school, and she thought of her own girl unable to keep up with the rest of the class and sick with a dangerous disease.

* * *

Molly Glum had a pretty hard time for several months, but she did not have tuberculosis. After a time spent at a sanatorium the little girl returned to her mother rosy and well, and very happy.

"Doctor," said Mrs. Glum to Dr. Wise the very day that Molly came home, "do you remember saying that when Molly came home you would tell me what to feed her? I want to know just how to keep her strong and well, so that she will be like Susie Gay!"

Dr. Wise reached into his pocket.

"Here," he said, "are rules planned by a nutrition worker. Mothers just like yourself have been using similar rules and have found from experience that they're good for growing children like Molly. I gave Mrs. Gay the same rules for Susie a long time ago."

These are the rules of the Health Game:

A full bath more than once a week.
Brushing the teeth at least once every day.
Sleeping long hours with windows open.
Drinking as much milk as possible, but no coffee or tea.
Eating some vegetables or fruit every day.
Drinking at least four glasses of water a day.
Playing part of every day out of doors.
A bowel movement every day.

Reprinted, at the request of teachers throughout the country, by courtesy of The Play School Committee of the Federation for Child Study, and The Health Service of the New York County Chapter, American Red Cross.

"Milk for Health" Campaigns

WHEN a city or community requests the Philadelphia Inter-State Dairy Council to conduct a milk for health campaign or to participate in health educational work, a representative of the council is sent to confer with the various educational, health and welfare organizations of the locality to determine the activities to be carried on, and the best method of procedure. Local milk dealers and producers in the community are requested to contribute toward the financial support of this educational work.

In carrying on such campaigns the Dairy Council offers the following assistance:

To schools:
1. Nutrition class cooperation.
2. Essays and poster contest prizes.
3. Literature and posters.
4. Milk fairies and four short plays.
5. Movies.
6. Illustrated health talks.
   Primary—food fairies.
   Grammar—How to keep fit.
   High school—How a city gets its milk supply.

To parent-teacher associations and women's clubs:
1. Literature and posters.
2. Speakers and illustrated talk on under-nourishment.
3. Movies.
4. Milk demonstration.

In various other ways the council also cooperates in educational work with rural communities, factories, health and welfare organizations, farm bureaus, and churches.

"The Reason Why"

"TEACHER says I must have hot vegetable soup at noon instead of at night."

Thus a small boy to his mother, whereupon the mother very naturally "came back" with the question: "Why?"

"Gee! I dunno," said the small boy, "but anyway that's what she said."

This is a true story, the scene being a prosperous community in an eastern state.

Does not this suggest a special opportunity for the teacher of domestic science to interpret to the grade teacher the principles underlying nutrition instruction?

This grade teacher in the stress of an already crowded day should not be asked to formulate a program of food education. This is the responsibility and high privilege of the teacher of domestic science. Perhaps in the case of the small boy of our anecdote the domestic science teacher had advised with the grade teacher in the matter of "hot vegetable soup at noon." But she failed to make clear the reasons "why," the lack of which troubled the little boy's mother. The very familiarity of the subject might easily lead to a cursory statement and one that might be shorn of simple and clear-cut explanation of the fundamental principles involved.

The little boy's mother was quite ready to provide the proper food at the proper time, but being a woman of intelligence, she wished to know the reasons for strict prohibition of this valuable food from the evening meal. The chances are that the teacher, thinking of the hot school lunch at which vegetable soup figured prominently, said something like this:

"When you have hot soup at noon tell your mother that it is not necessary for you to have it at night."

Or again, both teachers may have been quite accurate in their statements and yet have failed to satisfy themselves that the little boy understood clearly.

In the last analysis has not the teacher of domestic science a triple responsibility? First to have her own ideas on the needs of the children systematized and ready for transmission; second, to see to it that she formulates a workable program of nutrition instruction for the grade teacher; third, to help the grade teacher in her problem of passing on the instruction in such a form as to insure complete understanding on the part of the children and the parents.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **"Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for

Can You Make Buttermilk from KLIM?

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FRESH MILK—POWDERED

KLIM is the solids of pure pasteurized cow's milk in powdered form.

Use KLIM because it is economical. No waste from souring.

Simply add water to KLIM and beat with a rotary beater two minutes—then you have

MILK

Add to this milk, lactic culture or commercial buttermilk tablets. At the end of 36 hours churn and you have

BUTTERMILK

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Write for your copy of our

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Department of Dietetics and Cookery

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use in the class room. Among these are digests of current material on nutrition, articles on hygiene suitable for supplementary reading, etc.

3. **"Vitamins in Canned Foods."** A carefully prepared bulletin discussing the problems of processing as they affect the stability of the vitamins A, B and C.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5. **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their Importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better With Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

20. **"Bee Brand Manna of Cookery."** Tenth edition. Recipes tested by graduate of Columbia University. Specialties of southern cooks, suggestions and recipes.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."** A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for leftovers and plain desserts. A valuable pamphlet on the use of gelatine.

THOUSANDS USE IT!

Constipation is the national ill. No longer do we get the rough, bulky foods which formed such an essential part of our ancestor's diet. These acted as a preventive of this enemy to health. Constipation was as rare then as it is prevalent now.

But thousands are finding the new panacea—

FLEISCHMANN'S YEAST

This natural food gets to the source of the trouble—inactive intestinal muscles. It gives them the natural exercise they require —gently rids the body of the poisonous waste that is constantly accumulating in the intestines. Lack of this exercise causes constipation.

For lasting results, try two or three cakes a day—plain, or mixed with milk or fruit juices.

THE FLEISCHMANN COMPANY

FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

A Study of the Spoilage of Hams and Other Pork Products

By E. A. BOYER

Laboratory Inspector in Charge of the Omaha Meat Inspection Laboratory of the Bureau of Animal Industry, United States Department of Agriculture

THE spoilage of hams and other pork products is a matter of great importance to the meat packing industry. While the loss due to spoilage comprises only a small percentage of the quantity handled the aggregate loss is large, and involves not only financial loss, but also the spoilage of large amounts of valuable human food. The records of the Meat Inspection Division of the Bureau of Animal Industry, United States Department of Agriculture, show that 2,717,597 pounds of hams and other pork products were condemned as sour and 819,904 pounds as tainted or putrid on reinspection during the fiscal year ended June 30, 1922. This entire amount represents material which was at one time sound and fit for human food and was subsequently condemned as unfit for edible purposes. The financial and economic loss involved in the spoilage of such an amount of food is ample justification for any investigation as to causes thereof, and for the most diligent search for methods of prevention.

The importance of this subject was recognized by the bureau within a short time after the Meat Inspection Act of June 30, 1906, went into effect, and a thorough bacteriological investigation of the cause of ham souring was undertaken. The results of this study were published in Department Bulletin No. 132, "A Bacteriological Study of Ham Souring," by Dr. C. N. McBryde. This study has been of considerable value to the meat-packing industry in that it eliminated many of the theories which had previously been held concerning the causes of spoilage and pointed the way to more sanitary practices and methods in the handling and curing of hams.

McBryde describes as a cause of ham souring an anaerobic bacillus which he succeeded in isolating from sour hams from four different establishments. He gave to the organism the name B. putrefaciens. As to methods by which the bacillus enters hams he concludes that the organism or its spores is present in the dust and dirt of packing houses, and is introduced into the bodies of the hams during the various manipulations to which they are subjected in preparation for curing or during that process. He found the organism present in 50 per cent of the scrapings made from ham thermometers and evidently considered this to be the most important means of introduction into the hams. As to the possibility that the bacillus is present in hogs at time of slaughter, McBryde states that a number of fresh chilled hams were examined, but in no case could this anaerobic organism be detected in any of them. In support of the negative findings he states that the bacillus isolated from sour hams belongs to the class of putrefactive anaerobes which although possibly present in the intestines of healthy animals do not invade the organs and tissues of the body until after the death of the animal. He considers the time normally elapsing between the death of the animal and the removal of the viscera too short to admit of the invasion of the ham by such organisms.

Source of Bacterial Contamination

Perhaps the most important question in this matter from the practical viewpoint is the source of the bacterial contamination, for upon such knowledge largely depends proper application of methods of prevention. Certain observations as to conditions under which spoilage of hams and shoulders occurs have justified further inquiry into this phase of the problem. From experience the meat packer has learned that lack of careful and minute attention to details in the first chilling of the carcasses means an excess of spoiled or sour meats some thirty to sixty days afterwards when the meats are removed from cure. The fact that the bone marrow of hams and shoulders is sometimes found to be sour at the end of the normal forty-eight to seventy-two-hour chilling would suggest that there is due cause for giving particular attention to the proper chilling of the carcasses. It has also been observed that when the shoulders of hogs are found sour in any appreciable number upon removal from cure, the hams from the same day's kill are also apt to show evidence of spoilage. The fact that spoilage originates in the very interior of these largest muscular tissues of the carcass which last attain the chill room temperature would also appear worthy of consideration, since bacteria already present there would have greatest opportunity to multiply before being checked by the low temperature of the chill room. In order to obtain more complete information on this point, bacteriological examination has been made of fresh chilled hams.

The hams were taken from the cutting room of an establishment at this station. They were all derived from the carcasses of hogs which had been slaughtered in accordance with the regular practice of the establishment, had passed ante-mortem and post-mortem inspection, and had been hung in the chill room for a period of forty-eight hours. Twenty-nine such hams were examined. Specimens were collected at various times over a period of six months. The hams were all brought directly from the establishment to the laboratory. Less than an hour in all cases and less than thirty minutes in most cases elapsed between the time the hams were cut from the carcasses and cultures taken. Cultures were taken from each ham at one or more of the following localities: meat, bone marrow of femur, and synovial fluid of stifle joint. Due care was used to prevent extraneous contamination. The surface area at point of incision, also the exposed cut surfaces, were thoroughly seared. Sterile equipment was used in removal of material for cultures. A portion of the flesh in close proximity to the stifle joint, of about three grams in weight, was removed by scalpel and forceps. In taking cultures of the joint fluid, the meat was carefully removed, leaving intact the femero-patellar capsule. The exposed surface was then seared and a small incision made, through which the joint fluid was removed with a platinum loop. By means of a platinum spatula cultures of the bone marrow were removed under aseptic conditions. These were taken in close proximity to the nutrient foramen at which point the marrow shows a collection of blood.

Cultures were planted into Rettger's egg-meat medium, as modified by McBryde, for the development of any anaerobic organisms.

From sixteen of the hams cultures from the joint fluid, and occasionally cultures prepared by shaking a piece of the meat in sterile water, were also planted direct into nutrient gelatin for the preparation of aerobic plates. Two loopfuls of the joint fluid were used in each case and count made after four days' incubation at 20 degrees. The plates gave an average count of ninety colonies. In one case there was no evidence of growth, while in two instances there was such a multitude of organisms as to make count impossible. It was found that the aerobic growth was due largely to two organisms which developed only small colonies in four days at this temperature. There was also noted in many cases a small number of gelatin liquefiers. A large number of colonies from plates were picked off, an attempt being made to secure all of the types represented, and after further plating were transferred to agar slants for study. There follows a descriptive list of the aerobic organisms isolated.

Aerobic Bacteria

(1) A small non-motile ovoid rod. No spores. Possessing marked polar-staining qualities and often showing coccus-like forms. Culturally as well as morphologically this organism presented characteristics closely resembling B. bipolaris septicus if not identical with it. It was found in practically all the fresh chilled hams examined and seemingly was the most numerous of the aerobic organisms present. It is also the most common organism present in sour hams and is often present in very large numbers. It has also been found in sound, well-cured hams, showing no evidence of spoilage. No proteolytic or other biochemical characters to suggest that this is the cause of spoilage have been observed in the study of this organism.

(2) An organism showing cultural and morphological characteristics corresponding to those of Staphylococcus pyogenes albus. This organism was found in nearly all fresh hams examined, and in numbers was second only to the above mentioned bacillus.

(3) A gelatin liquefying organism identified as B. chromo-aromaticus (B. helvolus-Chester). This organism was frequently but not invariably found. The gelatin plates as well as the egg-pork cultures often revealed its presence by the characteristic strong and penetrating aromatic odor.

The following aerobic forms were also found with such frequency as to warrant mention.

(4) A small rapidly motile bacillus occurring singly and in pairs. No spores. Gelatin colonies round, entire, with rapid, clear liquefaction of the medium.

(5) A rather large micrococcus usually occurring in the form of diplococci.

There has been no reason to believe that any of these aerobic organisms as isolated from fresh hams are to any appreciable extent directly responsible for the spoilage of hams and shoulders. However, it has been found that certain species not only survive the effects of the refrigeration and curing agents, but make extensive growth in some instances even in the deep interior portions of the ham. It is possible that they may in some cases affect the flavor of the product.

Anaerobic Bacteria

The egg-pork cultures were held at room temperature for periods varying from five to eight days, and those giving evidence of any anaerobic growth such as digestion of the medium, development of foul odors, would at that time practically always show spore-bearing organisms on microscopic examination of smear preparations. Fresh egg-pork tubes were inoculated from these cultures and heated for thirty minutes at a temperature of 80 to 85 degrees C. When growth became evident in these tubes a series of shake cultures in deep neutral-glucose-agar tubes was prepared. The seeded tubes were then incubated at room temperature and out of those tubes which showed discreet growth isolated colonies were picked and planted immediately into fresh tubes of glucose agar. This process was repeated by making six replants in all cases of organisms retained for study. It is, of course, recognized that this method is of limited utility in that it would serve only for the isolation of spore-bearing organisms. The cooked meat medium of Robertson which has come into more general use might well have been substituted for the egg-pork. In fact, this medium was used when the cultural features were being ascertained for the reason that the biochemical features of anaerobes in such medium is fully described thus affording valuable assistance in identification.

Four species of anaerobic organisms were isolated. Notes would indicate that cultures taken from the bone marrow afforded the major part, however, owing to the fact already mentioned that cultures were not always taken from the three points (meat, joint-water and marrow) in all fresh hams examined, no positive statement can be made in that regard. The species of anaerobes isolated were found to have the following characteristics. Description of colonies pertains to those formed by shake cultures in glucose-agar. Cultures of the anaerobe described under No. 1 were incubated at room temperature as this was found to be the optimum. All others were incubated at 37½ C.

No. 1. A slowly motile organism with polar flagella. Motility noted only in young colonies from glucose agar but common to all cultures isolated. The organism develops rather large terminal spores which are at first slightly oval but when fully developed are perfectly round. Spore formation occurs only under restricted conditions. In pure culture the organism shows no tendency to develop spores in egg-pork medium. However, in mixed cultures or in culture with certain non-sporulating aerobes, the organism forms spores profusely in this medium. Taken from colonies in glucose agar the organism is large, fairly uniform in size, sometimes showing curved form and often in long irregular filamentous and chain formation. The organism is pleomorphic to a marked degree, for strains showing long regular rods in glucose-agar develop in egg-pork medium as short rather thick rods. Colonies develop slowly, and growth stops at about 2 ctm. from the surface of the medium. In three days they are small, dense and with little regularity as to shape. They do not show any marginal filaments even after ten days' incubation. In heavily seeded cultures there occurs considerable splitting of the medium. Strong growth takes place in stab cultures in plain nutrient agar. Milk shows no marked change. Plain neutral broth shows, in three days, turbidity and, later, light deposit. In dextrose broth all strains of the organism have shown similar development; a cloudiness throughout the closed arm and little evidence of extending into the bowl. Flecks collect on sides of closed arm. While gas formation in dextrose broth starts vigorously it is soon checked and only a small amount collects. The broth cultures have no marked odor. In egg-pork medium there is vigorous growth and after about four days' incubation many small bubbles of gas form in lower part of the tube. There is no evidence of digestion of the meat particles and the cultures do not possess any volatile odor even after thirty days' incubation. Smears from the cultures were, however, found to emit a very pronounced sour odor. The same statements apply to growth in the cooked meat medium.

The organism was found rather frequently in fresh chilled hams and has also been repeatedly isolated from sour hams. Cultures from sour hams, particularly those taken from manifestly sour bone marrow, often show it to be the predominating organism. As first isolated from sour hams it was regarded as identical with B. putrefaciens (McBryde). It was not until the organism was found in fresh hams and more carefully studied that the differential features were noted. Notwithstanding certain differences in cultural and morphological characteristics this organism is believed to be identical with that described in Bulletin No. 132.

No. 2. A straight rather plump motile rod, often forming chains and filaments in meat medium. Numerous oval spores were evident in twenty-four hours' growth in this medium. These generally occupied an equatorial position in the rod but occasionally were found to be subterminal. Colonies formed rapidly in glucose-agar and on twenty-four hours' incubation resembled a mass of filaments giving to the colony a very woolly appearance. In heavily seeded cultures there was disruption of the medium sufficient to lift the entire mass up to the top of the tubes. This fragmentation produced by twenty-four-hour growth of the organism was so extensive as not to be comparable with that brought about by any of the other anaerobes herein dealt with. It was also noted that colonies would form to within about 1 ctm. of the surface in the shake cultures, while with other anaerobes considered colony growth would stop at about 2 ctm. from the surface of the medium. Cultures in milk show a separation of the whey and complete digestion of the casein with only slight gas production which takes place during early stages of growth. Rapid growth takes place in meat medium. In twenty-four hours there is evidence of gas production and the formation of a black pigment. The meat particles become enlarged, assume a purple-like color, and digestion of the solid particles of the medium proceeds rather rapidly. All cultures of this organism emit a very vile odor. A number of cultures of this organism were obtained from fresh hams and it has also been isolated from sour hams. It has been isolated repeatedly from the bone marrow of fresh pork shoulders in which the marrow was observed to have become sour during the forty-eight-hour chilling period.

The organism appears identical morphologically and culturally with organisms of the malignant edema group.

No. 3. This organism was first isolated from the shoulder of a hog which was noted to have an abnormal odor when the carcass was being cut immediately after removal from chill. Cultures were taken from the deep muscles adjacent to the bone and from these was finally obtained this organism which produced in meat media the same odor peculiar to the shoulder. It has been isolated in numerous instances from fresh hams and also from the bone marrow of fresh pork shoulders in which the marrow was observed to have become sour during the forty-eight-hour chilling period.

The organism is a motile rod frequently grouped in pairs but no tendency to chain formation has been noted. Spores form rather rapidly being very evident in twenty-four hours' growth in meat medium. The spores are of oval shape and occupy a terminal position in the rod. The colonies produced in twenty-four hours are rather small, dense and with little regularity as to shape. There is not the slightest fragmentation of the medium, even in heavily seeded cultures. In the cooked meat medium the organism produces a peculiar change. In twenty-four hours there occurs a blackening of the medium and considerable gas is evolved. Digestion of the meat particles proceeds extremely rapidly and in three days about one-half of the solid particles have become liquefied. During the fourth day of growth there occurs a heavy deposit of white crystals which often collect in round masses throughout the undigested portions of the medium. The cultures emit a peculiar odor which is not extremely offensive. Although the nature of the odor is rather undefinable, it is very characteristic and not to be mistaken for that produced by any other organism herein considered.

The identity of the organism would appear to have been established as B. histolyticus.

No. 4. The strains isolated of this organism have all exhibited identical characteristics of growth in meat medium and shown other cultural similarity. An irregularity in stained preparations has also been found common to all cultures. There has been, however, a rather marked difference in morphology, one type being a rather slender rod with oval terminal spores and the other a much thicker rod with the oval spores occupying a somewhat less terminal position in the rod. Each type has been found to retain its characteristics through a long series of cultural transfers. It is believed there has been dealt with two types of a single organism rather than two distinct species. The rod taking the slender form has been found more frequently and is the one herein considered. The organism has shown no signs of motility even in young colonies from glucose-agar; however, suitably stained preparations have shown that the organism possesses numerous flagella. Spores formed in forty-eight hours in meat medium. They were strictly terminal, very oval in shape, and often longer than the rod to which attached. Smear preparations from this medium, even after many days' growth, would only show few rods, often slightly curved, scattered irregularly over the field, with no characteristic grouping. Faintly stained rods with an agglomerated condition of the protoplasm giving a granular or beaded appearance were often noted even in young cultures. The colonies formed during 24 hours' incubation were rather large and dense with irregular margins. Gas formation was evident and if colonies were thick there was extensive splitting of the medium. Growth in meat medium caused production of a large amount of gas. There also appeared in forty-eight hours the collection of a considerable amount of a semi-viscous like substance having the appearance of a colloidal solution. All cultures of this organism produced this condition when grown in meat medium and it is regarded as very characteristic. There also occurs, particularly in cultures left undisturbed at room temperature, a slight pink coloration of meat particles in the lower half of the tube. Cultures one month old emitted no appreciable odor. Smears from such cultures were found to possess a slight putrid odor.

The organism shows characteristics closely related if not identical with B. tertius.

From the fact that these aerobic and anaerobic organisms were found present in the very interior of these fresh hams, even the bone marrow, and that during the 48 hours since slaughter the carcasses had been held at low temperature it would appear to follow that the organisms were present in the carcass before they were placed in chill. As bearing on this point it may be stated that during the course of this work attention was diverted to a casual study of the flora of hog lungs. Many of the organisms isolated from these fresh hams were also found prevalent in the lungs.

In the examination of sour hams two of the anaerobic species herein described as present in fresh hams have been isolated in such number of cases as to warrant the belief that the condition is due largely if not entirely to this class of organisms. Certain hypotheses have presented themselves in the course of this work which it is proposed to make the object of further investigation. For example, the possibility that in many cases the organism or organisms causing the souring have been killed off before the cure is completed has been rather strongly suggested. From the fact that the anaerobes found were all capable of producing spores, it might be argued that although vegetative forms could be eliminated the spores would exist and germinate in cultures; however, there is no evidence that such organisms form spores at low temperature. As bearing on this point the fact is cited that in the majority of sour hams the condition is confined to a very small area, and in many cases there is seemingly no tendency for this to spread.

Another condition to be considered is the well-known property of anaerobic bacteria of growing in association or symbiosis with aerobic organisms.

Summary

(1) Conditions under which the spoilage of pork hams and shoulders were occurring led to a bacteriological examination of a number of fresh chilled hams.

(2) It was found that not only the meat but the joint fluid and bone marrow of such hams are practically never sterile.

(3) The organisms found were of both aerobic and anaerobic nature.

(4) Approximate quantitative determination of the joint fluid showed that the aerobic organisms at least are present in considerable number.

(5) Of the four anaerobic species isolated, one believed to be identical with B. putrefaciens (McBryde) has been repeatedly obtained from fresh chilled hams. The same organism has also in numerous instances been isolated from sour hams.

(6) Bacteriological examination has been made of the bone marrow of a number of fresh pork shoulders in which the bone marrow became sour during the period of chilling.

(7) Two anaerobes isolated from the marrow of these shoulders in such a large percentage of the cases possess such biochemical characteristics that it is believed they are largely responsible for the condition.

(8) These anaerobes were identical with two of the species found in the interior of fresh chilled hams.

Practical Consideration

It has been demonstrated that hams and shoulders as cut from the chilled hog carcass harbor organisms capable of causing spoilage. The development of these organisms is thought to be accountable for a large proportion of the spoilage of these products. It follows that measures which limit or prevent the growth and development of such organisms ought to be effective in reducing or eliminating such spoilage. Observations of conditions prevailing at different establishments give support to this view. The practical measures suggested as most likely to produce results in reducing the present incidence of spoilage are more prompt evisceration of carcasses and immediate removal from the killing floor to an efficiently operated chill room so that the development of organisms present may be checked as promptly as possible. In referring to the prompt evisceration of the carcasses that which is in mind is those cases which are neglected for various reasons, such as those which fall from the rail, or those railed out because of unsatisfactory cleaning. The possibility for a renewal of bacterial growth in the period ensuing between the time the carcasses are removed from the chill room and the curing agents become effective is also to be considered. The importance of thorough sanitation emphasized in Bulletin No. 132 is in no way diminished by the results of this investigation.

Pectin, Jelly-Making and Sugar

By DR. LEWIS H. CHERNOFF

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A GENERAL knowledge of the chemical properties of pectins would help considerably toward a better understanding of the nature of jellies and should be of special interest to those engaged in the beet-sugar industry. In the latter case reference is made particularly to problems of elimination and also to the difficulties encountered (when the Steffens process is used) known as "hard-boiling."

There is present in most plants and fruits a substance closely related to plant mucilages and gums, but differing from these in having the property of forming jellies, when heated with sugar, under proper conditions, in the presence of a little acid. The term "pectin" has been applied to this material.

It occurs in almost all parts of plants, particularly in the fleshy part of roots, such as carrot, beet, and turnip, and in most fruits in variable quantities. Most of it is present between the cell-wall layers in an insoluble form, probably combined with the hemicellulose of the cell walls. It is thought by some authors that the insoluble form is a calcium salt of pectin, since calcium is almost always associated with it. By the action of enzymes, naturally found in plants, the pectin is set free and becomes soluble in water. Some pectin is therefore found in the various juices of the plant. After maturity, the amount of pectin may decrease, owing to the action of the enzyme "pectose," until, in some cases, it may disappear entirely.

The original insoluble combination has been variously termed "pectose," "protopectin," "pectinogen," "pectin," etc., and much confusion has resulted in the literature on pectin. For convenience and from the derivation, it would seem that the most suitable name for this mother-substance would be "pectinogen" and the term "pectin" should be applied to the soluble product derived from this.

Pectinogen, when boiled with water for some time, more rapidly when acidified, and also by the action of certain enzymes, yields a soluble substance, pectin, which, combined with sugar and acid under certain conditions, is capable of producing jelly. This soluble material, pectin, behaves characteristically with alkalies. When treated with a small amount of tenth-normal sodium hydroxide in the cold, a certain amount of methyl alcohol immediately splits off, and more recently it is claimed that acetone is also formed. Upon acidification with a strong acid, an insoluble, gelatinous substance is precipitated out. This substance is quite acidic in character and has been called "pectic acid."

According to Fellenberg,[1] who has made an exhaustive study of the subject, pectin is the methyl ester of pectic acid, and he has calculated for this acid eight carboxyl groups. The quantity of methyl alcohol that Fellenberg obtained from pectins of different sources seemed to vary from about six to thirteen per cent. Moreover, the acidity of the pectins was not constant. Fellenberg then assumed that the different pectins varying in the methyl alcohol content were substances more or less saponified; that is, a perfectly neutral pectin, theoretically, would contain eight methyl alcohol radicals, but no free acid radicals. Under suitable conditions, these alcohol radicals would be split off, leaving the acid radicals free. If one alcohol group were removed, there would be left a pectin containing seven alcohol groups and one free acid group. The removal of two alcohol groups would result in a pectin containing six alcohol groups and two free acid radicals. As the alcohol groups are split off, the pectin approaches nearer and nearer to the composition of pectic acid, which, according to Fellenberg, is pectin with all the alcohol radicals removed.

Now pectic acid, although a stable, insoluble compound, can be broken down by more vigorous treatment with acids into various complexes and simpler compounds, among which have been isolated arabinose, galactose, an araban, galacturonic acid and a complex, tetragalacturonic acid.[2] It can readily be seen that a large number of these decomposition products might be obtained in various combinations. Some of these products have been called "protopectic acid," "meta-pectic acid," etc. It is of interest to beet-sugar chemists to know that one of these decomposition complexes, meta-pectic acid, has been stated to be similar to the arabinic acid found in beets.[3] Since some of the soluble decomposition products may be associated with the pectin in nature, undoubtedly a part may pass through in the refining process of beet sugar and collect in the molasses. In the Steffens process they may accumulate and on being reintroduced in increasing amounts in the first parts of the purifying process may lead to the condition known as "hard boiling." Furthermore, calculations based on optical rotation, such as in determining raffinose, may be in error due to some of these decomposition products which have very high rotations.

When pectin is heated with sugar, in the presence of acid, a jelly is formed. Pectin and sugar alone do not form jelly. A certain definite amount of acid is required. This is usually supplied by the natural acid of the fruit. Very recently Lal Singh[4] has stated that increase of acid, within certain limits, makes it possible to produce jellies with a lower sugar content. For example, using the same amount of pectin in each case, he found the following relationship:

0.1% acid (citric) required 66% sugar
0.2% acid (citric) required 62% sugar
0.5% acid (citric) required 57% sugar
1.0% acid (citric) required 54% sugar

Another table by the same author, using the same concentration of acid (1.5 per cent) indicates that an increase in pectin up to a certain limit saves sugar.

0.9% pectin, required 65% sugar
1.0% pectin, required 62% sugar
1.25% pectin, required 54% sugar
1.5% pectin, required 52% sugar
2.0% pectin, required 49.5% sugar

Somewhat previously Campbell[5] determined that an acidity of 0.27 per cent to 0.5 per cent (calculated as sulphuric acid) was the best condition for a pectin content of 1.25 per cent.

There is yet much to be learned concerning the relationship of pectin, sugar and acid. One of the main questions concerns itself with the preparation and analysis of pure pectin. The common method of precipitating the substance from a more or less purified solution by means of alcohol, in both the preparation and the analysis of pectin, is not sufficient, for other alcohol-insoluble products may come down with the pectin, especially some of its decomposition products. Perfect freedom from ash material is not the criterion of absolute purity.

Since the quantity of pectin varies with different kinds of fruit, and also somewhat with the maturity, it follows that different jellies require different amounts of fruit. When a fruit is naturally deficient in pectin, the deficiency, of course, can be made up by mixing it with a fruit of high pectin content, or by adding pectin. A number of commercial preparations are on the market containing pectin in concentrated form. These, almost all of them, contain other extractives also, such as sugar, mineral matter, or acid.

In jelly making, excess of liquid, either as water or fruit juice should be avoided, for the prolonged boiling necessary to evaporate the excess water tends to hydrolyze and destroy the pectin. The formation of a jelly may be the reverse process of saponification. Since methyl alcohol is so readily split off from the pectin to form pectic acid, theoretically it should be equally possible to synthesize the pectin from methyl alcohol and pectic acid. This has not yet been accomplished, owing probably to the great insolubility of the acid. However, it should be easier to synthesize a neutral pectin from a soluble pectin that is only partially saponified. The pectins, as found in nature, are probably all more or less saponified and sugars are polyhydric alcohols. It is theoretically possible, then, that in the jellying process the few free acid groups of the pectin may be esterified by some of the alcohol groups of the sugar. It is also possible that those methyl alcohol groups already attached to the pectin may be partially or entirely displaced by sugar. This hypothesis offers a very definite field of investigation.

The question of the kind of sugar used is important. Jellies have been made with glucose, honey, and corn syrup as well as saccharose. During the boiling down, since some acid is present, some of the saccharose is inverted. Whether inversion is actually necessary for the production of a jelly is not yet decided.

It has been regarded by some housewives that the beet sugar is inferior to cane sugar for jelly making. This idea is entirely fallacious since the two sugars are absolutely identical, chemically and physically. In a series of over two thousand tests, Shaw[6] has obtained identical results with both cane and beet sugar. Both sugars yielded products as clear as possible and there was no difficulty in preservation.

Very recently Ogilvie[7] has shown that the sweetness of sugar can be increased by a certain amount of acid or salt. A trace of alkalie tends to lessen the sweetness. Low-grade beet sugar usually contains a trace of alkalie which lowers its sweetening power. This condition, however, is hardly likely to be encountered now with the increased efficiency in the refining of beet sugar. Properly purified, as it is now, beet sugar is of the same sweetness as cane sugar.

As pointed out above, there are so many factors concerned in jelly making, such as the quality and quantity of pectin, the relationship of acidity and sugar to the amount of pectin used, the rate of water evaporation, that it is no wonder so many housewives cannot repeat their results. Not always working under the same conditions, various results are bound to be brought about.

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[1] Fellenberg, Biochem, Ztschr. Bd. 85, 118-161.

[2] Ehrlish, Chemiker-Zeitung, No. 28, (1917) 197-200.

[3] Browne, "Handbook Sugar Analysis," J. Wiley & Sons, New York, 1912.

[4] Lal Singh, J. Ind. and Eng. Chem., Aug. (1922), 710-711.

[5] Campbell, J. Ind. and Eng. Chem., June (1920), 555.

[6] Shaw, Cal. Expt. Sta. Cir. No. 33.

[7] Ogilvie, J. Soc. Chem. Ind., Aug. (1922) 343-345 R.

Labeling of Jams and Jellies

In accordance with plans made at its annual convention in January, the National Preservers' Association is carrying on a campaign against the lowering of standards by manufacturers of jams and jellies without adequate changes in the method of labeling. A statement has been issued by Daniel R. Forbes, counsel for the association, calling the attention of the trade to the fact that certain manufacturers have reduced the fruit constituents of their products to a minimum, while sugar, pectin and corn sirup have been increased beyond the usual or acceptable proportions, and warning that official action may be expected unless such products are honestly labeled. According to the statement, it has also become a habit with many manufacturers to label a pectin jelly as an "apple jelly" or as "apple-raspberry" where the apple constituent is in fact pectin and in some cases where the raspberry is not present in sufficient quantity to give fruit characteristics to the product. Jelly made with apple juice is properly termed "apple jelly." Jelly made with pectin or pectinous extract is a "pectin" or "apple-pectin" jelly. It is misbranding to call the latter product an "apple jelly."

A considerable quantity of pail jelly has been put upon the market under such names as "apple-raspberry" or "corn sirup—strawberry," but containing little if any of the fruit juice, artificially colored and, in some cases, flavored with a flavoring extract. The statement points out that the name of a fruit on such a product denotes that the jelly contains sufficient fruit juice to give the product the character and flavor of that fruit. Furthermore, flavoring extract is not regarded by the Bureau of Chemistry as a fruit constituent in a jelly.

Foodstuffs Around the World

Chinese Use Condensed Milk as a Beverage—American Raisin Bread is Popular in Switzerland—Dutch Housewives Like American Flour Better than Others

Canadian-West Coast Service Planned

Believing that the tremendous source of supply of cocoa, coffee, ginger, nuts, nut oils, and other raw foodstuffs on the western coast of Africa has yet hardly been scratched and that Canada could profitably trade with some of her sister colonies, a British steamship company plans the reestablishment of a direct Canadian-West Coast service. A similar venture was tried several years ago, Consul Cochran, of Montreal, informs the Department of Commerce, but owing to insufficient tonnage at that time was suspended. It is now believed that the service would be profitable. Canadian flours, canned foods, dried fish, and other products would be sent to Africa.

Night air for Normandy cattle

Dating back to 1791, when it was first marketed, the manufacture of camembert cheese has become a leading industry of Normandy, where the luxurious pasture lands give milk the peculiar richness and qualities most valuable in the making of cheese and butter. Camembert cheese now has a wide-world market, and has become so popular that it has many imitations. The grade of this variety of cheese depends upon the skill employed in its fabrication and the quality of the milk used, and while the general run of milk from the various sections of Normandy may show little difference in analysis, the results obtained in camembert making apparently depend on the character of the soil as much as in the case of wine or cider. Norman dairy cattle according to a report received by the Department of Commerce from Vice-Consul Levis, at Cherbourg, are kept in the open air at night as well as day, a practice having a tendency to restrict the quantity of milk while making it superior to that of more carefully sheltered cows, and it is from these "open air" cattle that the perfect camembert is produced.

Food Consumption Decreases in Germany

The consumption of nearly all the necessities of life has decreased very considerably in Germany since the war. That of such foodstuffs as bread grains, meats, and fats, has fallen off to a fraction compared with 1913 rations, according to a report, received by the Department of Commerce from Donald L. Breed, assistant commercial attache at Berlin. A comparison of the consumption figures of bread cereals shows a decrease from 239 kilograms per capita in 1913 to 180 kilograms in 1922. The consumption of rye shows the greatest decrease, because the use of rye for distilling has diminished. The decrease in the use of wheat is principally due to the partial abandonment of the manufacture of macaroni and noodles, especially for export, and fancy bakery goods, such as sweet crackers. There is, however, about the same amount of white bread consumed per capita as before the war, though the consumers seem to belong to a different class. Potato consumption fell from 656 kilograms per capita to 342 kilograms. In this case, the use of potatoes as an article of daily diet has actually increased, the German population substituting this cheap food for the more costly grains. The decline in potato consumption comes from the cessation of alcohol manufacture from potatoes and their use as stock feed. Perhaps the greatest decline, and the most serious, is that of fats and edible oils.

East Africa Supplies the Cashew Nut

Growing wild and in the greatest profusion the cashew nut of Portuguese East Africa is likely to come into its own, if the efforts of several African exporters at American import houses materialize. Cecil M. P. Cross, consul at the African port of Lourenco Marques, in a statement to the Department of Commerce says that the present shipments of the cashew nut from his territory represent but a thousandth part of the available surplus. The nut is offered for sale in many countries at candy shops and soda fountains, the supply having heretofore come from India.

Bolivia Buys Foreign Foodstuffs

Bolivia is continuing her heavy importations of foodstuffs of all kinds, and greater quantities of flour are being purchased in Chile, the American consul at La Paz reports to the Department of Commerce. Bolivia is well able to pay for her food imports, as her exports of tin, silver, and other ores are large.

Yields Supremacy After Thousand Years

Italy after almost a thousand years has relinquished its supremacy as an olive oil producer to Spain. The Italian production of olive oil is steadily decreasing, while in all competing countries, especially in Asia Minor, it is increasing rapidly, according to a report received by the Department of Commerce from H. Earle Russell, consul at Rome. Competition from across the Atlantic is now beginning to assume a sterner form, the olive groves of California, Chile, Argentina, and Uruguay yielding continually increasing harvests. During the period from 1909 to 1921, Italy with its olive-producing areas of 2,303,340 hectares made an annual average of 168,345 metric tons of oil, while Spain, with but 1,559,226 hectares produced 270,432 metric tons.

Netherlands Margarin Industry Growing

The margarin industry of Netherlands is reaching a point where it is likely to rank as one of the most important in the country, particularly in the export field, Trade Commissioner Adams, the Hague, informs the Department of Commerce. The industry dates from 1871 and at the present time embraces nineteen factories, employing about seven thousand workers. The extensive dairying industry of the Netherlands serves as an abundant source of supply for the quantities of milk and other dairy products required for the manufacture of vegetable butter Half of Netherland's output goes to England. Prior to the war the use of margarin as a substitute for butter in daily diet was confined mainly to the working classes. During the war and after, increased wages enabled many workmen to purchase butter, and this situation has in the main continued up to the present time. On the other hand, many persons in the middle and upper classes, with limited means, have been forced by the increased cost of living to turn to the use of margarin as a substitute for butter.

Five O'Clock "Milk" for the Chinese Now

Tea, the ancient beverage of the Chinese, is threatened by a formidable rival from the occident. The use of condensed milk as a beverage is growing among Chinese of the Swatow district, Consul Lester L. Schnare informs the Department of Commerce. Although excellent fresh milk, containing a high percentage of butter fat, is available from the water buffaloes and other cattle maintained in considerable numbers by the farmers for draft purposes, the Chinese make no use of this on their tables, nor do they use it in cooking. The sweetened condensed milk has won a place as a highly esteemed drink when diluted with hot water.

Raisin Bread Is Liked by Swiss

Cleanliness and attractiveness, added to a determined sales campaign, has lined up Switzerland as a wholesale user of American-grown raisins. Almost simultaneously with the burning of Smyrna last fall a large American packer of California raisins, aided by William H. Nathee, vice-consul at Zurich, opened up negotiations in Switzerland for the introduction of his product. The Californian was unfamiliar with conditions in that country, but determined to see that the sugar-sweet morsels from California's vineyards were given a proper introduction there. According to a report just received by the Department of Commerce, California raisins are now going into Switzerland in carload lots to supply the demand of the grocery stores and bakeries. Raisin bread, heretofore unknown, is taking the country by storm.

Canned Milk Trade was in Singapore

Fast and furious is the trade war among the dealers and importers of canned milk in the Straits settlements. English, Swiss, and Australian firms are endeavoring to underquote each other, with the result that canned milk is selling at prices which have sagged considerably, states a report to the Department of Commerce from Vice Consul Blackard, at Singapore. One brand of milk, manufactured in Australia, is actually selling below cost of manufacture.

Circuit Court Upholds Douglas Pectin Company

Declares that Product Made from Evaporated Apples Is Entitled to Be Labeled "Apple Vinegar"

The United States Circuit Court of Appeals, sitting at Cincinnati, has reversed the judgment of the District Court against the Douglas Packing Company of Rochester, charging that company with the misbranding of apple cider vinegar in violation of the Food and Drugs Act. In upholding the company's contention that vinegar made from the juice of evaporated apples is equally entitled to be labeled "apple vinegar" or "apple cider vinegar" to that manufactured from the juice of fresh apples, Judge Donahue declared that "the conservation of our food products is of some concern to the public and, perhaps, second in importance only to the demand for pure and unadulterated food. It is perfectly apparent that the apple season is altogether too short for the economical manufacturing of the crop, during the season, into cider vinegar in sufficient quantities for public consumption. Therefore an efficient and harmless method of preserving the fruit until it can be used for this purpose is in the direct interest of the public, and if this method has accomplished that object without change in the product, it should be encourage rather than condemned."

Use of Evaporated Apples Not Adulterated

According to the agreed statement of facts, the Douglas Packing Company is engaged in the manufacture of apple cider and apple cider vinegar; during the apple season, from about September 25 to December 15, sound, mature apples are used, and for the rest of the year evaporated apples of like quality. The principal result of the evaporation process is the removal of 80 per cent of the water contained in the natural fruit, and the science of chemistry has been unable to determine the removal of any other constituent by the process.

When the apple season is over, and evaporated apples are used, substantially the same amount of pure water is added that was removed by the evaporating process. The company employs the same receptacles, equipment and process as in the manufacture from unevaporated apples.

In the evaporating process small quantities of sulphur fumes are used to prevent rot, fermentation and decomposition, this being wholly removed, it is stated, by the addition of barium carbonate, or some other chemical that eliminates itself and the sulphur compound by precipitation. After fining (clarifying) and filtration, the cider or liquid obtained from the evaporated apples, upon chemical analysis will give results similar to those obtained by chemical analysis of apple cider made from unevaporated apples, except a trace of barium too small to be quantitatively measured, except for which it is similar in taste and composition to the vinegar made from the cider of unevaporated apples.

"It is clear," said Judge Donahue, in handing down his decision, "that this trace of barium, which is admitted to be neither injurious nor deleterious, does not constitute adulteration within the meaning of either of the paragraphs of section 7 of the Food and Drugs Act."

Vinegar Not Misbranded

In reversing the judgment as to misbranding of the products of the company, Judge Donahue said, in part:

"The important question in each case is whether the product is the identical thing that its brand indicates. If it is the identical thing indicated by the brand, the method of its manufacture, regardless of the information of the general public upon that subject, is wholly unimportant.

"It appears from the agreed statement of facts that the cider from which this vinegar was made was manufactured from apples and from nothing else. The process of its manufacture differed from the usual method only in so far as necessary to preserve the fruit. This was accomplished by the evaporation process above described. When a quantity of water equal to the amount evaporated is added to the evaporated apples and pressed therefrom it combines with and carries the solvent properties of the apple just the same as in the original state, or if not exactly and identically the same, so near as to defy the science of chemistry to discover the difference. This is the full scope and effect of the dehydrating process as appears by the agreed statement of fact....

"It may be true that a large part of the purchasing public has no knowledge whatever in reference to the manufacture of cider from evaporated apples and for that reason might have a distinct prejudice against such a method of manufacture. Undoubtedly the Pure Food and Drug Act contemplates the protection of the public in this regard, but only to the extent that the public shall not be deceived or misled by the brand into buying an imitation of the article or a substitute for the article indicated by the brand. If, however, it is in truth and in fact buying the identical article indicated by the brand, manufactured from the same basic elements and none other, the purpose of the statute is accomplished and the process of manufacture is of no importance."

Canadian Cheese Exports to be Graded

Hereafter all Canadian cheese for export will be graded by the government before being sent out of the country, according to a Department of Commerce report. The first steps toward the establishment of a cooperative plan for marketing cheese have been taken in Ontario and a system of grading cheese will be in operation when the cheese-making season opens in April. This signifies that definite grades, already approved by the dairy authorities and adopted by the government, will be established in connection with the industry and Canadian cheese sold according to the grade. The system of cooperative marketing is similar to that established by some of the fruit farmers of California for marketing dried fruits.

The objective set by the cooperative company, which was incorporated by a special act during the last session of the Ontario Legislature, is to create a control of 50 per cent of the cheese output of Ontario under a three-year contract. The Ontario Cooperative Dairy Products (Ltd.) purposes the thorough organizing of the dairy industry of the province, so far as the sale of cheese and butter is concerned, and the coordinating of the output of local cheese factories and creameries into a central selling agency which will pool and merchandise their products, thus eliminating the speculative features of the trade by selling direct to the large distributors.

American Sugar Refining Company Elects Two Directors

W. Edward Foster and Fred Mason, recently elected to the board of directors of the American Sugar Refining Company, have served previously as vice-presidents of the organization. Mr. Foster has been active in the sugar refining industry since 1883, with the American Refining Company and its predecessors. Beginning his career as an office boy he has been successively head of the transfer department, chief bookkeeper, general auditor, comptroller, treasurer and vice-president.

Mr. Mason, although connected with the company less than two years, has been active in the grocery trade for many years. Starting as a grocer's boy in a Minnesota frontier town when he was nine years old, he has been a jobbers' salesman, jobber, association secretary, specialty manufacturer and executive. He served at various times as secretary of the National Association of Retail Grocers, as assistant sales manager of the Diamond Match Company, president of the Shredded Wheat Biscuit Company, and president of the American Specialty Company.

New Ice Cream Law in Pennsylvania

The new ice cream law which went into effect in Pennsylvania on March 20 prohibits the use of all chemicals and doubtful substances that can prove injurious to the well-being of the consumer. Cream and its products will hereafter be the principal ingredients used in the manufacture of ice cream.

Cocoanut fat and other foreign fats and oils are prohibited in the manufacture of ice cream, as well as the use of paraffin in chocolate-coated ice cream. The legalized use of gum tragacanth is also eliminated under the new measure, and the sale of any imitation or substitute for ice cream under a coined or trade name is forbidden.

Informal Meeting of National Food Brokers

For the benefit of members of the National Food Brokers' Association who will attend the annual convention of the National Wholesale Grocers' Association at the Statler Hotel in St. Louis, May 16, 17, and 18, an informal meeting of the former association will be held at the same time and place. A similar informal meeting will also be held at the New Willard Hotel, in Washington, May 22, 23, 24, and 25, in connection with the annual convention of the American Wholesale Grocers' Association.

Illinois Bill to Amend State Food Laws

Vigorous Opposition to It Is Urged by Food Interests on Ground that It Would Injure "Distinctive-Name" Products

Senate bill No. 216, amending certain sections of the Illinois food laws, has been introduced by Senator Boyd of that state and attention is directed to it by food interests who believe that the adoption of the bill should be vigorously opposed.

Section 8 of the present law which defines adulteration is amended by this bill specifically to prohibit sulphur dioxide in all foods, "with the exception of sulphur dioxide in quantities not exceeding two hundred and fifty (250) parts per million." In other words, sulphur dioxide could not be used in excess of the whole percentage in molasses, syrups, or in any other food, if the above bill becomes a law.

But the feature of the bill which is most objectionable is that it proposes to amend section 9 of the present law which defines misbranding. The amendment proposed is the elimination of the distinctive name clause. The distinctive name clause as it now appears in section 9 of the present law provides that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases.

"First—In case of mixture or compounds which may be now or from time to time hereafter known as articles of food under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where the article has been manufactured or produced."

This provision is the same as that found in the federal food law and it is claimed that there is no plausible excuse for striking it out of the Illinois law.

Those who have studied the proposed legislation say that every food product on the market being sold under a "distinctive name" would be rendered adulterated and misbranded if the bill goes through. Many of these distinctive-name products have been advertised under such names at great expense.

The Boyd bill also proposes to amend Section 12 of the present Illinois law to read as follows:

"Extracts made of more than one principle shall be labeled in a conspicuous manner with the name of each principle, and in all cases when an extract be labeled with two or more names, such names must be in a conspicuous place on said label, and the name of one of the articles used shall not be given greater prominence than another; Provided, that all extracts which are made in imitation of true extracts shall be labeled 'imitation' in letters similar in size and immediately preceding the name of the article: Provided, further, that prepared cocoanut, containing nothing other than cocoanut, sugar and glycerine, shall be labeled as prepared cocoanut, when so made, and need not be labeled 'compound' or 'mixture.' Any such extract not labeled as herein provided for shall be deemed to be misbranded within the meaning of this act."

This section as it appears in the present law reads as follows:

"..xtracts, labeling, extracts, made of more than one principle shall be labeled in a conspicuous manner with the name of each principle, or else with the name of the inferior or adulterant; and in all cases when an extract is labeled with two or more names, such names must be in a conspicuous place on said label, and in no instance shall such mixture be called imitation, artificial, or compound, and the name of one of the articles used shall not be given greater prominence than another; Provided, that all extracts which cannot be made from the fruit, berry, bean, or other part of the plant, must necessarily be made artificially as raspberry, strawberry, etc., shall be labeled 'imitation' in letters similar in size and immediately preceding the name of the article: Provided, further, that prepared cocoanut, containing nothing other than cocoanut, sugar, and glycerine, shall be labeled as prepared cocoanut, when so made, need not be labeled 'compound' or 'mixture.' Any such extract not labeled as herein provided for shall (be) deemed to be misbranded within the meaning of this act."

A suggested amendment for section 12 reads as follows:

"Sec. 12. Prepared cocoanut, containing nothing other than cocoanut, sugar, and glycerine, shall be labeled as prepared cocoanut, when so made need not be labeled 'compound' or 'mixture.' Any such extract not labeled as herein provided for shall (be) deemed to be misbranded within the meaning of this act."

The above bill also amends section 39(a) of the present law which establishes standards for various food products. The standards are not changed by the above bill, but the following provision appearing at the end of section 39(a) of the present law is stricken out by the terms thereof:

"Provided, that nothing in this section shall be construed to prevent the sale of any wholesome food product which is below such standard, if such article of food be labeled so as to clearly indicate such variation: Provided, further, that in all places where foods below such standards are sold in bulk or have been removed from its original package, there shall be placed in a prominent position a placard in large letters of not less than one inch in length which shall clearly indicate such variation so as to be easily read by customers."

The striking out of the above provision might seriously interfere with the sale of non-standard products.

Fixed Price Law Being Considered in Canada

A proposed anti-trust law now under consideration at Ottawa, according to "The Canadian Grocer," would have "selling plans, resale price agreements, etc., submitted to some one in authority for his approval before putting them into effect. He would have to consider the margin to the wholesaler and the probable margin to the retailer, and go into the entire plan. Once approved by him the manufacturer could proceed without further objection from any government authority."

This "person in authority" would consider "any actual or tacit contract, agreement, arrangement or combination which has or is designed to have the effect of:

"(1) Fixing a common price or a resale price, or a common rental, or a common cost of storage or transportation."

It is provided that the governor in council may name a minister of the crown to be charged with the general administration of the act, and shall appoint a registrar to be known as the Registrar of the Combines Investigation Act. The duty of this registrar is to deal with applications for investigation of any alleged combines. He may call for information from the manufacturer and may make any inquiry he considers is necessary in order to get thoroughly into the matter brought to his attention.

Any person resident in Canada of full age of twenty-one years who thinks a combine exists or is being formed may apply in writing to the registrar for investigation and place before him the evidence on which his opinion is based.

New Educational Head of Meat Packers' Institute

Dr. Willard Eugene Hotchkiss has been appointed director of the Bureau of Industrial Education of the Institute of American Meat Packers to develop the plan of the institute for a national institution in Chicago offering technical education to men entering the packing industry. Dr. Hotchkiss, who was formerly dean of Northwestern University School of Commerce, served in 1920 as executive secretary of the President's Industrial Conference, and in the same year became executive director of the National Industrial Federation of Clothing Manufacturers, a position which he holds at the present time. He is the author of books on business education and industrial relations, and has served on various labor adjustment boards.

The institute has also announced the appointment of Dr. C. Robert Moulton, previously head of the Department of Agricultural Chemistry in the University of Missouri, as director of its Bureau of Nutrition, and of Miss Gudrum Carlson, formerly at Teachers' College, Columbia University, as director of the Bureau of Home Economics.

Machinery and Supplies at Box Makers' Convention

A trade exposition where supply and machinery men from every part of the country may display their products will be held in connection with the fiftieth annual convention of the National Paper Box Manufacturers' Association and the annual meeting of the Western Division to be held in Indianapolis, May 9, 10, and 11.

Proceeds from the trade exposition are to be used for making a moving picture film showing the most interesting steps in paper box manufacture.

Harry B. Mahan of Indianapolis is chairman of the convention, and James L. Kalleen of the exposition committee. The executive office of the exposition director, Claude S. Wallin, is at 608 Chamber of Commerce Building, Indianapolis.

STATEMENT BY

DOUGLAS-PECTIN CORPORATION

All our products are manufactured under most sanitary conditions and the raw materials used are selected with the utmost care and are of finest quality.

For three years a controversy has been carried on in the Courts on the question of the proper labeling of Vinegar manufactured by the Douglas Packing Co.—one of the companies recently merged in the Douglas-Pectin Corporation The question of quality was never at any time involved.

Under date of April 3rd, 1923, the U. S. Circuit Court of Appeals (6th Circuit) handed down a decision completely substantiating the above statement and upholding the Douglas Packing Co. in each and all of its contentions.

This statement is made by us in view of willfully false and malicious statements recently published in a New York newspaper.

DOUGLAS-PECTIN CORPORATION
Robert Douglas, President

Rochester, N. Y., April 5, 1923

Resale Prices Sustained in Mennen Case

FOOD manufacturers, along with others who produce a great many proprietary articles, have won a victory in the decision of the United States Circuit Court of Appeals in the Mennen case. The court fully sustains the right of the manufacturer to establish resale prices and to maintain those prices by refusing to sell to those who violate the price agreement. A part of the decision is given as follows:

"What the Mennen Company has done is to allow to 'wholesalers' who purchased a fixed quantity of their products a certain rate of discount — while to the 'retailers' who purchased the same quantities it denied the discount rates allowed to the 'wholesalers.' This does not indicate any purpose on the part of the Mennen Company to create or maintain a monopoly.

"The company is engaged in an entirely private business and it has a right freely to exercise its own independent discretion as to whether it will sell to 'wholesalers' only or whether it will sell to both 'wholesalers' and 'retailers,' and if it decides to sell to both it has a right to determine whether or not it will sell to the 'retailers' on the same terms it sells to the 'wholesalers.' It may announce in advance the circumstances, that is the terms, under which it will sell or refuse to sell.

"In the Colgate case the court sustained the right of a manufacturer engaged in a private business to announce in advance the prices at which his goods may be resold and his right to refuse to deal with wholesalers or retailers who do not conform to such prices. As subsequently explained by the court that case was decided upon the ground that the manufacturer had an undoubted right to specify resale prices and to refuse to deal with anyone who failed to maintain the same. And in the case now before the court it does not appear and is not alleged that the Mennen Company ever undertook to fix the prices at which its products were to be resold by those who purchased from it.

"In the Beech-Nut case the right to fix the prices at which the manufacturer will sell is again fully recognized. But the course which the Beech-Nut Co. had adopted was condemned because of the method it pursued to control the resale price.

"In Sears, Roebuck & Company vs. Federal Trade Commission the Circuit Court of Appeals in the Seventh Circuit declared in speaking of the Federal Trade Commission Act: 'We find in the statute no intent on the part of Congress, even if it has the power, to restrain an owner of property from selling it at any price that is acceptable to him or from giving it away.'

"And in Great Atlantic & Pacific Tea Co. vs. Cream of Wheat Co. we declared in our opinion written by Judge Lacombe: 'Before the Sherman Act it was the law that a trader might reject the offer of a proposing buyer, for any reason that appealed to him. That was purely his own affair, with which nobody else had any concern. Neither the Sherman Act nor any decision of the Supreme Court construing the same, nor the Clayton Act, has changed the law in this particular. We have not yet reached the stage where the selection of a trader's customers is made for him by the government.'

"In accordance with these opinions, we have no doubt that the Mennen Co. had the right to refuse to sell to retailers at all, and, if it chose to sell to them, that it had the right to fix the price at which it would sell to them, and that it was under no obligation to sell to them at the same price it sold to the wholesalers.

"It did not discriminate as between retailers, but sold to all retailers on one and the same scale of prices. And it did not discriminate as between wholesalers, but sold to all wholesalers on one and the same scale of prices. There is nothing unfair in declining to sell to retailers on the same scale of prices that it sold to wholesalers even though the retailers bought or sought to buy the same quantity the wholesalers bought."

Retail Grocers Report to Business Research Bureau

Twenty thousand questionnaires sent out to retail grocers by the Bureau of Business Research of Harvard University to assist in making a survey of the 1922 retail grocery business brought in, prior to March 12, 339 reports. Classified under Federal Reserve Bank Districts, these were as follows:

Boston District	39
New York District	33
Philadelphia District	15
Cleveland District	36
Richmond District	6
Atlanta District	10
Chicago District	71
St. Louis District	14
Minneapolis District	23
Kansas City District	38
Dallas District	11
San Francisco District	43
	339

The bureau hopes to bring the number of reports up to one thousand before May 7. Retail grocers who wish to have their figures analyzed with the average may write to the Bureau of Business Research of Harvard University, Cambridge, Massachusetts, for blanks to fill out with their report.

Filled Milk Bill Passes in Pennsylvania

The Jones filled milk law which becomes effective in Pennsylvania on June 19 is a companion measure to the Voigt filled milk law, which recently became a federal law, and is similar to laws in operation in New York, New Jersey, Ohio, Maryland, Wisconsin, Washington, California and other states. It declares unlawful the manufacture, sale or exchange of any milk, cream or skimmilk with which has been added, blended or compounded any fats or oils other than milk fats, "either under the name of said products or the derivatives thereof, or if labeled under any factitious, coined or trade names." The use of chocolate as a flavor is not prohibited.

The passage of the bill is largely due to the active fight waged by the Interstate Milk Producers' Association, the Dairymen's League Cooperative Association, the Pennsylvania State Grange and other farmers' organizations. It was passed without a dissenting vote.

Filled Milk Legislation Adopted in More States

The National Dairy Union, which was largely instrumental in bringing the Voigt filled-milk bill to a successful vote during the recent session of Congress, is not relenting in its activities to get similar legislation enacted in the state legislatures. State legislation, it is stated in a bulletin issued by the council, is making rapid progress. Bills have been passed during the winter in Washington, Oregon, Vermont, Pennsylvania, Massachusetts and Tennessee and similar legislation is pending in Idaho, Kansas, Iowa, Minnesota, California, Connecticut, Illinois and some other states.

New York, New Jersey and Wisconsin were the first states to adopt anti-filled-milk legislation, this happening more than a year ago. Ohio, Maryland and Connecticut have restrictive laws which do not go as far as other state laws or the new federal law.

The text of the law just passed in Massachusetts is interesting because of its brevity. The law, which was signed on March 23, reads as follows:

Chapter 94 of the General Laws is hereby amended by inserting after Section 17 the following new section:

Section 17-A. No person himself or by his servant or agent shall for the purposes of sale or exchange add any fat or oil other than milk fat to, or blend or compound the same with, any milk, cream or skimmed milk, whether or not condensed, evaporated, concentrated, powdered, dried or desiccated, nor shall any person himself or by his servant or agent sell, exchange or deliver, or expose or offer for sale or exchange, any milk, cream or skimmed milk in any of the aforesaid forms to which has been added or with which has been blended or compounded any fat or oil other than milk fat. Whoever violates any provision of this section shall be punished by the penalties prescribed by section twenty-four.

Shipments of Soaked Scallops Are Stopped

An educational campaign carried on by the Bureau of Chemistry among shippers to demonstrate that the swelling of scallops during washing can be prevented, has resulted in materially improved conditions in the scallop industry in North Carolina, according to W. G. Campbell, acting chief of the Bureau of Chemistry of the United States Department of Agriculture. Analysts in the Bureau of Chemistry worked out in the laboratory an effective method of cleansing scallops with either fresh or salt water, to take the place of the former soaking by which for a number of years the weight and volume of scallops coming from North Carolina have been increased, and shippers were warned that soaked scallops were adulterated under the terms of the Food and Drugs Act. Effective help was given the Bureau of Chemistry by the State Fish Commission, which issued regulations covering the soaking of scallops and policed the district to see that the regulations were complied with. Similar methods are being used in other districts where the soaking of scallops is practiced.

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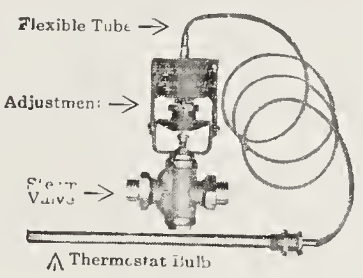

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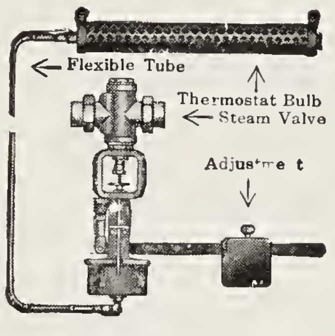

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Association and Convention Calendar

American Association Creamery Butter Manufacturers. Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Association, 1135 Fullerton avenue, Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N. W., Washington, D. C. Secretary, Charles L. Parsons

American Cider and Vinegar Manufacturers' Association, 841 Powers Building, Rochester, N. Y. Annual meeting, June 6 Rochester, N. Y. Secretary, Paul Benton.

American Corn Millers' Federation, 332 South La Salle street, Chicago. Secretary, T. M. Chivington.

American Dietetic Association, Washington, D. C. Secretary, Beta Luther, Children's Hospital, Boston, Mass.

American Home Economics Association, 1211 Cathedral street, Baltimore Alice F. Blood, Simmons College, Boston: Lenna F. Cooper, School of Home Economics, Battle Creek, Mich. Convention, July 30-August 3, Chicago.

American Macaroni Manufacturers' Association, 26 Front street, Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Association of Products from Corn, 208 South La Salle street, Chicago. Annual meeting early in the year. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Association, 52 Park place, New York. Secretary, H. F. Thunhorst.

Association of Operative Millers, Postal Telegraph Building, Kansas City, Mo. Next convention, June 4 to 9, 1923. Secretary, M. F. Dillon.

Biscuit and Cracker Manufacturers' Association of America, 90 West Broadway, New York. Convention, May, 1923. Secretary, R. T. Stokes

Flavoring Extract Manufacturers' Association of the United States. Secretary, Gordon M. Day, Day-Bergwall Co., Milwaukee, Wis.

Institute of American Meat Packers, 509 South Wabash avenue, Chicago. Secretary, W. W. Woods.

National Coffee Roasters' Association, 64 Water street, New York. Manager, Felix Coste.

National Association of Ice Cream Manufacturers, 155 North Clark street, Chicago. Secretary, N. Lowenstein.

National Association of Retail Grocers, 416 R. A. Long Building, Kansas City, Mo. Next annual convention at St. Paul, Minn., June 23 to 28, 1923. Secretary, H. C. Balsiger.

National Canners' Association, 1739 H street, N. W., Washington, D. C. Secretary, Frank E. Gorrell.

National Confectioners' Association, 11 West Washington street, Chicago. Convention at Atlantic City, May 23, 24 and 25, 1923. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan avenue, Chicago, Ill. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana avenue, Washington, D. C. Secretary, A. M. Loomis.

National Food Brokers' Association, 326 West Madison street, Chicago. Secretary, Paul Fishback.

National Macaroni Manufacturers' Association, Braidwood, Ill. Next meeting, June, 1923. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I street, N. W., Washington, D. C., Secretary, Charles W. Holman.

National Paper Box Manufacturers' Association, 112 North Broad street, Philadelphia. Annual convention, May 9 to 11, 1923, Claypool Hotel, Indianapolis, Ind. Secretary, William W. Baird.

National Pickle Packers' Association, 326 West Madison street, Chicago. Secretary, F. A. Vickers.

National Wholesale Grocers' Association. M. L. Toulme, 6 Harrison street, New York, secretary. Convention in St. Louis, Mo., May 16, 17 and 18.

Rice Millers' Association, 609 Maison Blanche Annex, New Orleans, La. Convention, May 31, 1923. Secretary, F. B. Wise.

Armour and Morris Companies Merged

Joint Business of the Two Companies Will Total 15 Per Cent of Country's Trade in Meat Foods

By a consolidation effected on March 28 the assets of Morris & Company were formally taken over by Armour & Company, making of the two meat packing concerns a $50,000,000 organization. Final contracts were signed by J. Ogden Armour, Nelson and Edward Morris, and officials and legal representatives of both the Armour and Morris interests.

The purchase of the Morris assets was made through the North American Provision Company, a subsidiary of Armour & Company of Delaware, which in turn is a subsidiary of Armour & Company of Illinois. The purchase price was in the neighborhood of $29,000,000 paid in cash and securities of Armour & Company and its subsidiaries.

Armour & Company will assume practically all the assets and liabilities of Morris & Company. The latter will go into liquidation.

In a statement given out by officials of Armour & Company, attention is called to a report to Congress made by Secretary Wallace which states that the combined Armour and Morris businesses will total only about 15 per cent of the trade in meat foods and only about 23 per cent of the business done by packers under federal supervision.

The consolidation according to Secretary Wallace's report is not in violation of the Packers and Stockyards Act.

Armour & Company officials say that the merger will save millions of dollars in administrative and operating costs through elimination of duplication of operating units. It is the company's intention to add to its directorates business men not previously identified with the packing interests and financiers representing the investing public.

According to the company's announcement, a finance committee will be created, of which Samuel McRoberts of New York, President of the Metropolitan Trust Company, is to be chairman. Other members of this committee will be A. H. Wiggin, Arthur Reynolds, F. Edson White and Philip D. Armour, three members constituting a voting trust, the body to have control of certain stock owned by the Armour family which it is planned to sell. It is said that stock is also to be sold to employees of the company.

Forms of Adulteration and Misbranding of Foodstuffs

The food we eat today is freer from harmful preservatives and other added deleterious ingredients than ever before, according to W. G. Campbell, acting chief of the Bureau of Chemistry, United States Department of Agriculture. The accidental adulteration of food during production, transportation, or manufacture by harmful bacteria or by minute quantities of arsenic, tin, zinc, or lead from utensils used in manufacture, is becoming less frequent each year as manufacturers improve their processes and apply more effectively the science of sanitation.

The forms of adulteration most frequent today, according to Mr. Campbell, affect the pocketbook more often than the health. The two most common of these are the substitution of cheaper ingredients for higher priced ones, the former being sold under the name and usually at the price of the more expensive product, and the use of partly decomposed food materials which may, or may not, be injurious to health, but which are always offensive.

Some recent cases based on the charge of the use of decomposed materials as food include canned fish, salt herring, prunes, frozen egg yolk, apples, evaporated milk, shell eggs, tomato catsup, tomato puree, oranges, raisins, raspberries, salad dressing, sardines, and canned salmon. Too much water, the cheapest of all adulterants, has been found recently in sauerkraut, canned tomatoes, butter, flour, oysters, canned clams and canned shrimp, and made the basis of prosecutions or seizures. One of the most persistent offenses is the sale of cheaper vegetable oils under the name of olive oil.

A common form of misbranding encountered is the overstatement on labels of the quantity of food in package form. The Food and Drugs Act requires that all foods in package form coming within its jurisdiction bear a plain and conspicuous statement of the quantity of contents. There is a tendency on the part of some manufacturers to falsify these statements; to say, for instance, that a package contains a pound when in fact it contains only fifteen ounces or less.

Other forms of violation of the Food and Drugs Act upon which prosecutions or seizures have been based recently include apricot pulp adulterated because it was decomposed and contained foreign material such as leaves, grass and some dirt; immature and artificially colored grape fruit; jellies made of a mixture of glucose, pectin and phosphoric acid artificially colored and containing little or no fruit; beans labeled as red kidney beans but which were in fact long cranberry beans; potatoes incorrectly branded as to grade.

Clear spring water four times filtered

A nice idea of Beech-Nut purity and cleanliness may be glimpsed from this one fact—that water from mountain springs is filtered four times in preparation for the making of Beech-Nut Ginger Ale.

Similar care is used in every Beech-Nut process. The Four-Times-Filtering spirit is carried all the way through the Beech-Nut organization. After every possible thought has been given to sanitation, the Beech-Nut people have a clever way of thinking some more.

In the interests of the pure food movement, the Beech-Nut Packing Company will furnish, without cost, macaroni and peanut butter exhibits to domestic science teachers, dietitians and others engaged in the dissemination of pure food information.

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Conspiracy to Hamper Business Through Cooperative Agreements Charged

The Federal Trade Commission has recently issued a complaint charging two wholesale grocer associations, several manufacturers and a wholesale grocer with a conspiracy to hamper the business of Procter & Gamble Company through cooperative agreements. According to the complaint the Missouri-Kansas Wholesale Grocers' Association, Peet Brothers' Manufacturing Company, of Kansas City; The Rub-No-More Company, of Fort Wayne, Indiana; Iowa-Nebraska-Minnesota Wholesale Grocers' Association, Slocum-Bergren Company, and Gowan-Lenning-Brown Company, of Minneapolis, Minn.; James S. Kirk & Company and Cudahy Packing Company, of Chicago, instituted a campaign to hinder the sale of Procter & Gamble soap products. This followed a change of policy by the Procter & Gamble Company, when it began to quote equal prices to all buyers of equal quantities, regardless of whether such buyers were wholesalers or retailers. The commission charges that the respondents urged cancellation of certain orders previously placed with the Procter & Gamble Company by members of the associations.

Misbranding of Salt Held to Be Unfair Competition

For advertising ground rock salt imported from Germany as "highest grade of salt obtainable," without disclosing its foreign origin, T. S. Southgate & Company and Taylor Brothers & Company, of Norfolk, Virginia, and the Lexington Grocery Company, of Lexington, North Carolina, have been declared by the Federal Trade Commission to be guilty of unfair methods of competition, and a cease and desist order has been issued against them. The commission found on investigation that T. S. Southgate & Company, acting as a broker for the other respondents, was selling ground rock as "common fine," "fine," and under other designations which meant to the trade and public a salt manufactured in the United States and by the evaporation process. The companies are prohibited from:

(1) representing in any way as "common fine" or "fine" salt sold and distributed unless such salt is in fact manufactured or produced by the evaporation process;

(2) describing any salt sold and distributed as being "the highest grade of salt obtainable" when such representation is not true in fact;

(3) selling or offering for sale any salt imported from Germany or any other foreign country without disclosing to the purchasers thereof that said salt was imported from Germany or such other foreign country as the case may be.

Adulterations of Olive Oil Have Been Reduced

Found guilty of adulterating and misbranding olive oil on several counts, George Vafier, a Greek, trading under the name of the Pan-American Commercial Company, has been fined $300 in the Federal Court of the Southern District of New York. Nicholas Lyriotakis and Michael Lyriotakis, co-partners, were fined $200 for the same offense. The convictions were brought about by the Bureau of Chemistry of the United States Department of Agriculture, which is making a drive against unscrupulous dealers who sell cottonseed, corn, peanut and other vegetable oils as pure olive oil. On a former occasion the Pan-Italian Commercial Company was fined $500 in the Municipal Term Court, New York City, for adulterating olive oil by the addition of from 33 to 50 per cent of peanut oil. The prosecution in that case was conducted by the Board of Health of New York City.

Records of the Board of Health show that a material reduction in the adulteration of olive oil has resulted from the prosecution of such cases during the last year. In May, 1922, 63 per cent of the samples of olive oil picked up by its inspectors in New York were adulterated. In December the adulterated samples found amounted to only 5 per cent.

Pectin Manufacturing Companies Combine

Plans are under way for the consolidation of the Douglas Packing Company and the Pectin Sales Company under the corporate name of Douglas Pectin Corporation. Both are located in Rochester, N. Y. The Douglas Packing Company, which is the successor of the New York State Fruit Company, organized in 1906, is a large manufacturer of vinegar, although its main business is the manufacturer and sale of pectin, used in the manufacture of preserves.

The consolidated company will have the entire stock ownership of the Douglas Packing Company, Ltd., of Cabourg, Canada. The plants of the consolidated companies are located at Fairport and Canastota, N. Y.; Charlemont, Mass.; South Royalton, Vt.; and in Devonshire, England. The company also has an agency in Liverpool.

Food Found to Be Spoiled Should Be Destroyed

Shippers of spoiled food are liable to prosecution and the shipments subject to seizure even though such foods are not intended for consumption but are being returned to the manufacturer for refund, according to an announcement by the Bureau of Chemistry, United States Department of Agriculture. The practice of returning such foodstuffs, particularly canned goods, for the adjustment of claims for spoilage, has long existed in trade circles. Frequently this material finds its way back into trade channels and is again offered for consumption. Such spoiled foods are not only unfit for consumption but are potentially dangerous to the consumer, says the announcement.

Bureau of Chemistry officials advise that spoiled or polluted food should be destroyed as soon as its condition is known, thereby preventing it from again entering the channels of commerce.

New York Grocers' Barometer for March

There was a slight increase during March in the purchasing power of consumers, according to the barometer prepared by the New York University Bureau of Business Research for the New York Wholesale Grocers' Association, covering the wholesale grocery trade in New York. A decrease in purchasing power for laboring classes was more than made up for by a gain on the part of the rural population and commercial classes. The weighted average price of wholesale groceries, however, has increased rather sharply, and the spread between consumers' purchasing power and prices has greatly narrowed. As a result according to the bureau's forecast, it is probable that the physical volume of the grocery business will be unfavorably affected in the near future and caution in buying is recommended.

A Height and Weight Chart for Boys and Girls
(Arranged from Dr. Woods' Tables)
Five Cents Apiece—A Discount on Quantities
Issued By
THE AMERICAN FOOD JOURNAL 37 West 39th Street, New York

Trade Mark Registered.
Gluten Flour
40% GLUTEN
Guaranteed to comply in all respects to standard requirements of U. S. Dept. of Agriculture.
Manufactured by
FARWELL & RHINES
Watertown, N. Y.

EAT
SKINNER'S
Pure Egg Noodles

The American Food Journal
The National Magazine of the Food Trades
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The Advantages of Glass Containers

Growth in Use of the Glass Package for Food Products the Result of Painstaking Work to Develop an Ideal Container

By HAMILTON COCHRAN
Glass Container Association

The contents of the glass package are always on view and invite inspection

WHEN the modern American housewife takes up her market basket for a trip to the corner grocery or delicatessen store to purchase provisions for her family, the thought uppermost in her mind is to buy the commodities that will be most healthful and conducive to the physical well-being of those about her. As she passes the front window of the grocery store, no doubt her attention is drawn to a display of numerous varieties of food products packed in glass. Upon entering the store, she sees ranged along the counter glistening pyramids of fruits, vegetables, and preserves that delight her eye because of their natural and wholesome appearance. Perhaps she intended to buy only a loaf of bread or a pound of butter, but when she leaves the place she has in her basket a jar of preserved peaches or a glass package of spring peas.

If you should ask her why she bought them she would probably reply, "Why, they looked so good and appetizing, I just couldn't resist getting some. I could see that they were high quality goods, because all I had to do was to look at them."

It is very likely indeed that Mrs. Housewife or the grocer who sold her the food, and possibly even the jobbers and food packers, themselves, do not realize the tremendous amount of conscientious labor, scientific research and experimentation, and the long years of development that have made possible the present marketing of food products, beverages, and medicines in glass.

The making of glass has been closely connected with the historical and economic development of the human race, and almost from the dawn of history, about 4000 B. C., Egyptian artisans were turning out delicately molded glass beads for the adornment of mighty Pharoahs and blowing crude wine bottles. From the Roman historian, Pliny, comes the romantic story of the re-discovery of glass by a group of shipwrecked Phoenician sailors who were cast up on a barren coast, and, being unable to find any rocks to serve as support for their cooking utensils, utilized blocks of nitron, taken from the cargo of the vessel. Tradition relates that the fire which they kindled heated these pieces of nitron to such a high temperature that it became fused with the sand beneath, and so formed small pellets of glass, much to the amazement of the stranded voyagers.

As we turn the pages of history, we find them replete with accounts of progress in the art of glass-making. Greece and Rome produced exquisite

Continuous drawing of sheet glass, as shown here, is the latest word in glass manufacture

examples of colored glassware; the Venetians and the glassmakers of Florence became famous throughout Europe for their lovely crystal goblets and vessels; the mirror makers of Louis XIV created marvellous panels to reflect the aristocratic countenances of the French nobility.

Today America can claim first place among the nations in producing the highest quality of glass containers used for commercial purposes. In 1607, only a few years after the first pioneer settlement of English colonists in Virginia, a glass factory was established in the forest not far from Jamestown. In those early days, no one thought of preserving fruits and vegetables and other foods in glass because of the poor quality of glass and its highly fragile condition. And so for almost two hundred years after the first settlers set foot on American soil, people had to content themselves with dry foods and salted meats.

Development of the Glass Package

The high quality of the glass package has been the result of years of painstaking study and research. Manufacturers realized that unless they could produce a container that would withstand all manner of shocks incidental to handling and transportation they could not hope to convince food packers that its use was practicable. As a result we now have a glass container that is strong and durable, that can be carried thousands of miles in all sorts of conveyances with an exceedingly low percentage of breakage.

Manufacturing processes have so improved that at present the ordinary type of glassware, as it goes out from the glass factory, is "not only uniform and of a good white color, but is also so carefully annealed that breakage in transit, handling, sealing, and during processing is negligible."

Food packers and beverage bottlers have received such close cooperation from the glass container manufacturers that they are now able to engage actively in the export trade, shipping their goods to the four corners of the earth with the knowledge that both container and contents will arrive at their destination in perfect condition. Very recently the president of the White Rock Mineral Water Company reported that the average breakage on the bottles which he used was only one and one-third per cent from all causes.

A recent report submitted to the Interstate Commerce Commission by a representative group of packers employing glass containers shows that their losses, due to breakage and leakers as taken from actual records, were at an average of not over one-half of one per cent for a period of one year. The extremely low percentage of breakage which now characterizes the uses of glass containers has been made possible only through the close cooperation of manufacturer and user, for, after all, it is the transportation element that imposes the most exacting tests on glass.

For some time past a movement has been under way, sponsored by the Bureau of Standards of the United States Department of Commerce, for the increase in economy and efficiency of the glass container industry through the reduction of the number of odd shapes and sizes of glass receptacles. Representatives of trade associations, engaged in the production, packing, and distribution of food products in glass containers, have met with Herbert Hoover and his assistants in Washington at various times during the past six months with the object in view of simplifying the various sizes and shapes of containers, and setting up a number of standards for the different products manufactured in the glass container industry. Committees are now at work making a careful survey of the situation, and it is probable that this movement will result in the production of a number of standard shapes and sizes that the consuming public will come to recognize when they buy glass-packed foods.

Making the Glass Container

Of all the inventions that have contributed toward the development of American-made glassware, none is so far-reaching as the automatic bottle blowing machine. This invention has made possible the production of glass containers on a large scale, has materially reduced their cost, and has given to the commercial world a container of a standard quality. Some of the machines are gigantic and ponderous affairs, weighing many tons, with from twelve to fifteen arms apiece, and equipped with a system of tubes, hinges, and springs which automatically raise and lower the huge hands of the molds. A. W. Bitting, formerly research director of the Glass Container Association, thus describes these machines: "They present the appearance of unlimited brute strength with a fiendish delight in sucking up the hot molten glass, squeezing it with an iron grasp, and dropping it as a completed red hot bottle. These bottles drop out singly, in pairs, or even quadruples, and at a rate varying from 5 to 120 per minute. The bottles or jars are correct in weight and in capacity from one drachm to twelve gallons. Among all inventions, none are ranked higher than glass blowing machines in contributing to the public welfare. They have banished child labor from the industry more effectually than any legislation and have changed the whole life expectancy of the glass workers."

The present texture and toughness of the glass container permits of its being handled with as much ease in the factory as any other type of container. Indeed, it increases the efficiency of handling, and because of its transparency immediately reveals any imperfections that might be found in the jar or bottle before it is filled, thus insuring proper labeling of all goods that go out from the factory.

Along with the development of the glass container itself have come remarkable improvements in the caps and closures which seal it. The object underlying the preserving of all types of food products and beverages is the exclusion of the air which so quickly causes decomposition. Unless the container is closed with an air-tight seal its value is destroyed along with the contents. If one goes into a grocery store and studies closely the glassed foods displayed there, he will find that the containers are fitted with a number of different types of closures. All of them afford complete protection to the contents from the atmosphere; the main difference is the way in which they may be removed by the consumer. Most of these closures are so designed as to enable the user to reseal the jar after part of the contents has been used.

Standardization has also been at work among the manufacturers of caps and closures, and standard sizes are now in use, enabling the closure manufacturer and the glassmaker to work in perfect harmony. Both these interests have labored for many years in conjunction with food packers to solve their problems, and the machinery that has been developed enables the glass container to be processed at any temperature for any length of time with a maximum amount of safety in such a uniform way that every batch is cooked alike. The pressure system of cooking has now reached such a high state of perfection that it is possible to pack in glass any product that can be sealed in a container of any kind. It makes no difference whether the food is packed cold with or without vacuum, or whether it is cooked. The temperatures necessary and the length of time required in cooking have no effect on the resistance of the present glass package. It is built to withstand the most severe processes.

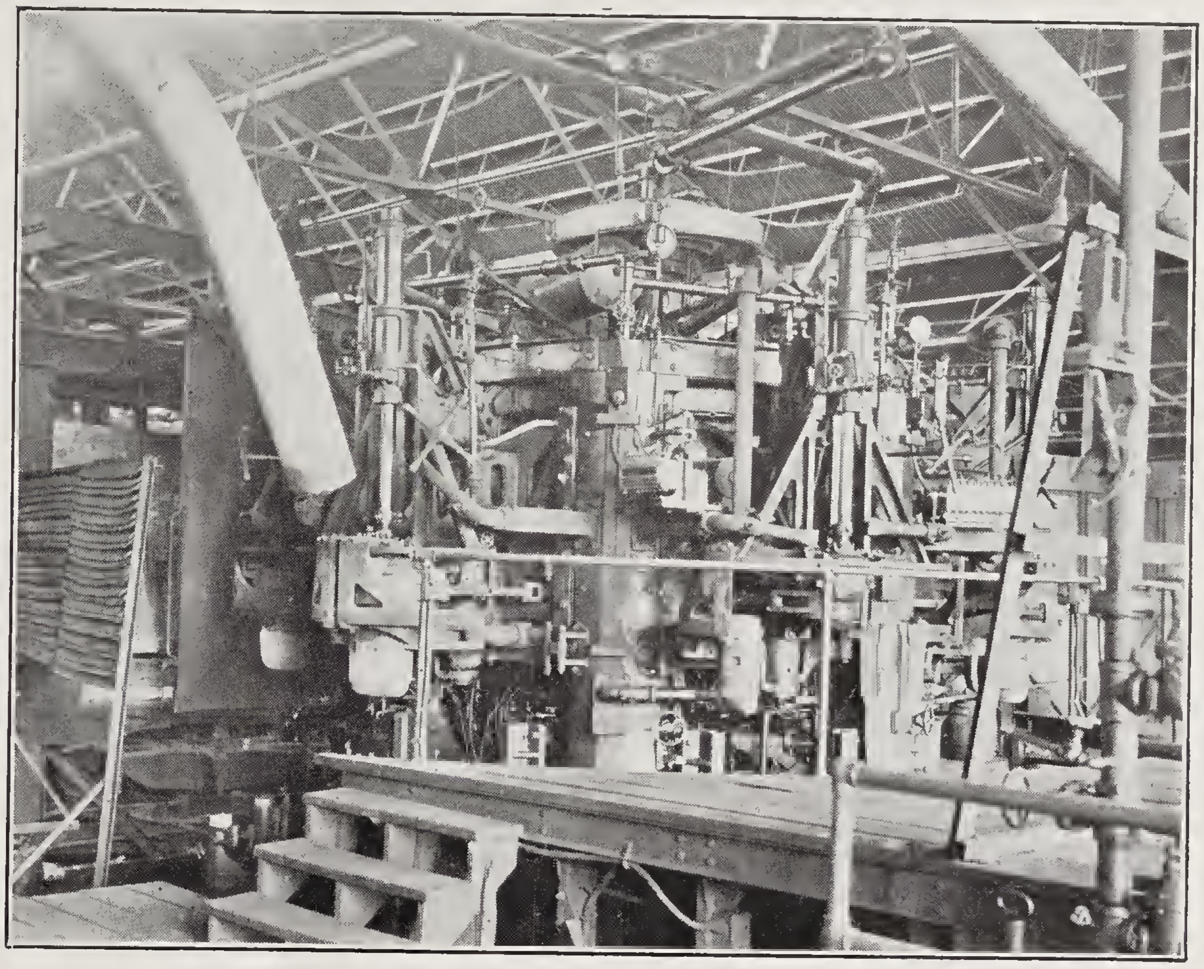
Early Days of the Industry

The man who stands out sharply as the pioneer of the food packing industry was M. Nicolas Appert, an inventor and scientist who probably did more than any man in laying the ground-work for the great industry as it exists today. Unfortunately, during his lifetime he received very little recognition for the discoveries which he made in methods of preserving food and few honors came his way, although the French government realized the far-reaching effect of his investigations.

In his little volume on "The Art of Preserving Foods," published in Paris in 1810, he gives in a quaint way the results of his many years of labor. It is interesting to note that even as far back as Appert's time it was realized that glass was the best possible medium for packing foods. In the chapter on "Bottles and Vessels," he says, "I have chosen glass as being the material most impermeable to air. I have not risked a trial with other materials." M. Appert found great difficulty in obtaining glass receptacles suitable for his purposes, and he declares that: "The ordinary bottles generally have the openings too small and are poorly made; they are too weak in other respects to resist the blows of the pallet and the action of the heat. Therefore I have had bottles made expressly, having larger openings and with contractions."

Glass Package Open to Inspection

The advantages of the housewife and the consumer in buying food products packed in glass are too numerous and important not to be touched upon. The contents of the glass package are always on view and invite inspection. It follows, therefore, that it is an honest container and guarantees goodness. There is no food packer in the country who would dare to put up a low quality product in the glass container, for immediately the consumer would see that the food he was about to buy was imperfect, and would choose some other glassed product that was sound. The housewife, in buying in glass, is therefore assured of safe and wholesome products for her family. Containers of glass are capable of being completely sterilized. There is no possible chance of contamination for glass is unaffected by either acids or alkalis. Products contained in glass are entirely free from foreign flavors and the container has a decided re-use and salvage value. This point alone is being realized by many housewives, for it is a means of effecting household economy.



The Owen automatic bottle-blowing machine, capable of producing one hundred and twenty bottles a minute

To the food packer, wholesaler and retailer, the advantages of the glass container are as important and vital as those to the housewives, for the glass package places the packer and all firms handling it in the quality class. Furthermore, it guarantees one hundred per cent inspection and gives self-inspection privilege to the consumer, thereby establishing a strong market confidence. When food products are packed in glass, they practically sell themselves, for every grocer realizes the display value of them, and places them in prominent sections of his store. Groceries, cafeterias, delicatessen stores—all of them use every available space to give the utmost prominence to glass-packed foods. Here is a last word in front line display advertising, gladly given by the retailer, not only as a tribute to the quality and attractiveness of the product, but also as a method of boosting the sales to both parties. No greater plan for bringing the maker's name so forcefully before the public could be conceived, for glass-packed foods appeal to the strongest advertising points known—healthfulness, cleanliness, and appeal to the appetite.

That the public is realizing the value of commodities put up in glass is evidenced by the tremendous increase in the sale of such products during the past few years. One large packer announced recently that his entire stock of glassed foods was exhausted three months after the season's pack was made. Another is planning to put up ten times more vegetables in glass than he did last year and his entire pack will run into many millions of jars. From these indications it is only reasonable to suppose that in the near future the glass container with its contents will be found in every home; and meanwhile the industry will continue zealously its study and development of the glass container with the knowledge that it is contributing to the health and happiness of mankind.

A Remedy Proposed for Food Law Conflicts

Charles Wesley Dunn, Counsel for American Specialty Manufacturers' Association, Suggests Plan by Which Uniformity Can Be Brought About

By CHARLES WESLEY DUNN
Counsel for American Specialty Manufacturers' Association

Mr. Dunn in this article suggests a practical solution of the problem of lack of uniformity in food laws. He urges the enactment of an identical definition of the basic terms, "food," "drug," "adulteration" and "misbranding" in the general food laws, federal and state, and further the uniform construction and application of these laws and the determination of all questions relating to the purity, wholesomeness and labeling of foods under the general food law, where practical, without resort to special statute for that purpose. He also urges the development of an intelligent public opinion convinced of the fundamental necessity and value of the desired uniformity and expressed and directed to secure it.

THERE is need of a renaissance of constructive interest by the American food industry in the question of the uniformity of the food control laws. That interest became dormant during the period of the war when every effort was required and patriotically directed to quicken, marshal and conserve the nation's food supply for the great objective, under the magnificent leadership of Mr. Hoover. It has since spasmodically revived. But it yet remains subnormal, below the line of responsibility and service.

The natural leader in the enlightened and due development of the American food law is the American food manufacturer and dealer. He best knows what statutory regulation is needed to protect the public from the unwitting purchase of articles injurious to health or imposing a deceit and to secure the industry from the detriment flowing from competition based upon wrongful practices. He best knows whether the enacted law is right in its practical application, when tested by the proper interest of all concerned. This knowledge, true because derived from fact, and the duty of public service inherent in the calling he pursues create in him a primary responsibility which he may not ignore and from which he cannot escape, the responsibility of giving thoughtful, active and constructive consideration to the state and betterment of the law regulating that calling, usually best accomplished through associated effort. The industry has faithfully and well discharged this responsibility in the past and it will not be found wanting in it in the future.

It cannot be truly said that the prevailing law is deficient in its fundamental condemnation of adulteration and misbranding or weak in its penalty. There is a strong Federal Food and Drugs Act effective wholly to prohibit interstate commerce in any food that is unfit for human consumption or sold under a label that is false or misleading in any particular, the violation of which is subject to a penalty of fine or imprisonment, or both, and in the enactment of which the food industry played a leading and influential part, to its lasting credit. And this act is efficiently and vigorously enforced under the experienced and able direction of the acting chief of the Bureau of Chemistry, of the Department of Agriculture, Mr. Campbell.

A review of the official record of the administration and enforcement of the act clearly establishes both its beneficent value and the high standard of the nation's food supply, as a whole. Similar statutes have been enacted in the several states. These general laws are supplemented by a multitude of special laws of all sorts. The outstanding fact is that the American people have never enjoyed better protection of the purity of their food supply and greater security against its sale under false pretenses than today, which is the essence of the food control law; that they have never enjoyed a better food supply than that available today. They have every reason to be proud of their wonderful and matchless food manufacturing industry, built, organized and operated in pursuance of the accumulated and best knowledge and skill of the science and experience of the world, producing the finest foods in the greatest abundance at the lowest cost, an everlasting monument to the enterprise and idealism of American industry.

It cannot be truly said, on the other hand, that the prevailing law has attained the standard of completion and perfection. Much could be said as to this. We might observe that the law will always be in a process of evolution. We might refer to the official suggestion that the Federal Food and Drugs Act fails to provide for the sanitary production, storage and handling of foods and drugs entered into interstate commerce; that it fails to outlaw from the channels of interstate commerce foods and drugs that are falsely and fraudulently advertised; that it should be amended to authorize the promulgation of definitions and standards for foods and to prohibit the use of containers deceptively formed or filled. But our present purpose is rather to direct attention to the great and fundamental fault of the present food control law, as a whole, to wit, its lack of uniformity.

The American people have in their wisdom established a dual form of government. There is the sovereign government of the United States and the sovereign government of the individual states, forty-eight in number, exercising powers limited only by a federal and state constitution and independently exerted within that broad limitation. The power of the Congress to regulate interstate commerce is supreme, plenary and exclusive. Likewise the power of the state legislature to regulate intrastate commerce, in the absence of its surrender.

There is a line that marks and separates interstate from intrastate commerce, defined by the principles established by the decisions of the Supreme Court of the United States in the adjudged cases. Hence the Congress is free to enact legislation regulating interstate commerce in foods and drugs, in pursuance of its own discretion and subject only to the limitations imposed by the Constitution of the United States, and it has done so. Moreover it has exerted its power to tax indirectly to regulate all commerce, as in the case of narcotics, oleomargarine and mixed flour. And each state legislature is free to enact legislation regulating intrastate commerce in foods and drugs, in pursuance of its own discretion and subject only to constitutional limitations, and it has done so in large measure. The result is an enormous mass of regulatory legislation, federal and state, astonishing and indeed startling in its diversity and conflict.

The same product is officially endorsed as pure and wholesome in one state and condemned as unwholesome and injurious to health in another state. The same product is legitimate in one state and an unlawful fraud in another. A label is legal in one jurisdiction and illegal in another. And a prison offense may depend upon nothing else than the mere color of the label, the mere wording of the label or the mere order of its declaration or the mere size of its type. This conflict of law has got to the point where a product must be diverted from one or several states although freely sold in all the others, must be specially manufactured or labeled for sale in a certain state or states, although granted complete freedom of sale elsewhere, where a manufacturer of a nationally sold food inherently pure in composition and free from any suggestion of deception or fraud can hardly escape being a technical lawbreaker somewhere in the land. This situation would be amusing if it were not so serious.

Common Requirements

Lack of uniformity in the definition of the purity, wholesomeness and label of an ordinary article of food commonly sold and consumed through the country, under the prevailing and applicable federal and state laws, can be justified in neither principle, reason nor fact. We are all one people with a common government. We are all consuming the same common products. Their effect upon our health is generally the same. Our protective need is universally the same. There is no distinction in the inherent responsibility of the manufacturer or dealer to the purchasing public or of the public at large to the individual consumer anywhere in the land. To say that a food becomes unfit for consumption or a label deceptive because of the locality of the residence of the consumer is to do violence to reason, common sense and fact. There may be a local need for supplemental regulation to meet a local condition. But there is no local need anywhere in the United States that requires a different and diametrically opposed standard of purity and wholesomeness or label in the case of foods of general and common consumption.

State Regulation

This being so, the problem presented is how the desired uniformity of law may be secured. Permit us at once to say that it may not be secured by depriving the state of the power, inherent in its sovereignty, to regulate intrastate commerce in foods. Public opinion would not, as it should not, approve that. We hold the firm conviction that the public interest and welfare require the maintenance of the power of local self-government in the most important of all objects and subjects of government, the preservation of the health of the local people, subject to the limitation, among others, that it should not be permitted to be exercised to the extent of unduly interfering with or prohibiting interstate or national commerce effectively regulated by the Congress acting for and in the name of all the people of the United States. Permit us further to say that such uniformity may not be secured by attempting to extend the application of the federal food and drugs act beyond interstate commerce and into the field of intrastate commerce to the exclusion of its regulation by local law, since that cannot be done consistently with the Constitution of the United States. This for the sufficient reason that the power of the Congress exercised in the enactment of that act is limited to the regulation of interstate commerce. And there is a line dividing interstate from intrastate commerce beyond which the act cannot go. In short, uniformity must be secured, if at all, in harmony with fixed constitutional limitations.

The available and practical solution of the problem is. we think, essentially this:

1. The enactment of an identical definition of the basic terms "food," "drug," "adulteration" and "misbranding" in the general food laws, federal and state. If these terms are to be substantially amended the amendment should originate in the key federal law, since the model is naturally that law. And if the federal law is justly effective in both definition and administration, it should be acceptable to all fair-minded persons.

2. The uniform construction and application of these laws. Manifestly the determination under the general law of the fact of the injurious or deceptive character of a food necessarily involves the exercise of administrative discretion, and an opposing conclusion may be reached under identical laws. Such uniform construction and application may be secured in either or both of the following ways, viz.: first, by the consent of the officers charged with the administration of the laws acting in pursuance of a common plan, which has been successfully devised and operated under the direction of the United States Department of Agriculture; second, by incorporating in each state law a provision that the rules made thereunder shall be uniform with the rules made under the Federal Food and Drugs Act.

3. The determination of all questions relating to the purity, wholesomeness and labeling of foods under the general food law, where practical, without resort to special statute for that purpose. The general law is designed and should be effective normally to settle all questions of this character. Special food laws have their value and place. But they should not unnecessarily preempt the field already and effectively occupied by the general law since the result is unwarranted duplication and multiplication of law and certain conflict in it.

4. The development of an intelligent public opinion convinced of the fundamental necessity and value of the desired uniformity and expressed and directed to secure it. Such uniformity will never advance beyond the state of approval of the underlying public opinion necessary to its realization.

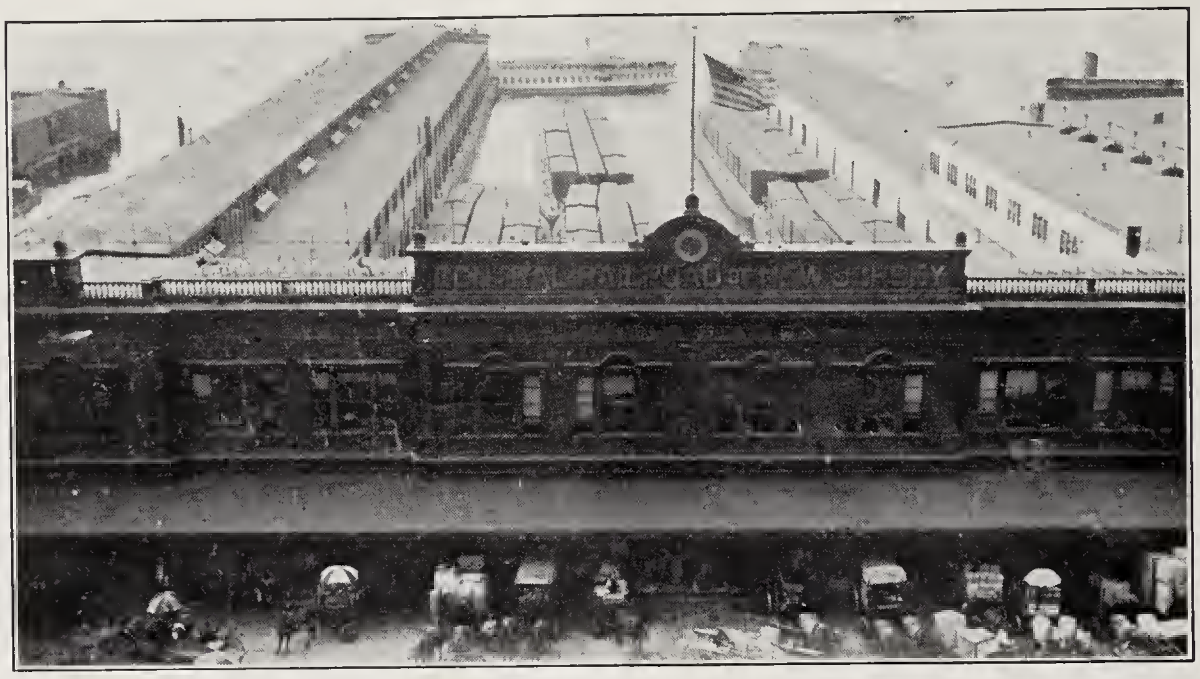
Local Police Regulation

We should add that the Congress, by virtue of its paramount authority over interstate commerce, is empowered to declare by statute that foods and drugs in the channels of interstate commerce and complying with the terms of the Federal Food and Drugs Act shall be free from the incidental affect of the food law of any state, even though that law is not repugnant to the federal regulation. (Savage v. Jones, 225 U. S. 501.) Whether it shall do so is within its discretion. A state cannot, of course, under cover of exerting its police power, undertake what amounts essentially to a regulation of interstate commerce or impose a direct burden upon that commerce. But when the local police regulation has real relation to the suitable protection of the people of the state and is reasonable in its requirement, it is not invalid because it may incidentally affect interstate commerce, provided it does not conflict with the legislation enacted by the Congress pursuant to its constitutional authority and in the absence of a declaration by Congress that such commerce shall be free from its incidental effect.

Some Facts Not Shown by Shipping Tables

How Growth and Drift of Population and Developing Industries Influence World's Interchange of Foodstuffs

By CAROLINE B. SHERMAN
Market Technologist, United States Department of Agriculture



Where water and rail transportation meet. Much of the produce brought to these piers by boats is transferred to the freight cars standing on lighters for loading, which will later be switched to the rails and dispatched

FROM time to time we become concerned over that class of food products that are readily raised in this country, of which we sometimes export quantities, and sometimes import quantities, and often do both during the same year. Publication of these figures for 1922 has awakened this discussion anew.

Export and import tables which furnish us the bare figures cannot undertake to give underlying reasons, and the readers are therefore prone to think that this sending forth and bringing in of the same food product is a mere haphazard happenso, showing lack of system and foresight in the American people.

Examination of source, variety and season of food importations shows that much of the stuff is not closely competitive. Climate, seasons, quality, costs, transportation rates, consumers' preferences—each has its effect on this apparent interchange of food and each deserves consideration.

In some cases improvement or change in export and import is doubtless desirable; in others, the gain in variety of foods, stimulated appetite and improved standards of the table probably amply justify the practice; in other cases the status of the American farmer does not make competition with cheap foreign labor desirable.

The desire for fresh fruits and vegetables during the longest possible season is largely responsible for the stable yearly importation of potatoes, for the small number brought in from Bermuda come very early in the season before our usual prolific early supply from Florida is ready for the markets. The potato movement from Canada is a natural geographic movement. The eastern-grown potatoes in Canada are nearer to our big eastern markets than potatoes grown in the Central West. Otherwise, potato importations are largely emergency items and profitable only in times of special shortage here. Later in the season when our crop is at its height we are ready to send to other countries stable quantities for their regular supply. Excess of potato imports over exports for a series of years is less than one per cent of the crop and would be still less except for occasional seasons of great domestic scarcity. Importations of such items as fresh fruits from South America, Africa, and Australia are the result of opposite seasons and compete mainly in a special class, as with the out-of-season hothouse fruit.

Presence of eggs and raisins on the lists of both imported and exported foods may be largely explained by differences in quality and grade. The dried, frozen, and canned eggs for commercial cooking purposes that form a considerable portion of the eggs brought from China are not really comparable with the more or less fresh eggs that we export to European countries for cooking and for table use. Some of our imported raisins are of a cheap, inferior grade that do not supersede any desirable trade. American farmers should not be encouraged to put that kind of food on the market, for it seems certain that quality production at the lowest compatible cost of production is the best hope for the stability of American agriculture.

A federal expert has managed to locate and name the bacteria that allow us to make Swiss and French cheeses which, even the Swiss and French people say, rival the foreign cheeses from those countries. So our importations of Roquefort, Camembert and Swiss cheeses are decreasing, but the Italian and Greek imported cheeses include special makes for which we have no close substitutes. Some of these come because demanded in the original packages by people of various nationalities living in the United States. Certain large cities have stores that specialize in foods put up to suit national tastes and customs.

Imports of staples from Europe, including potatoes, beans, cabbage, and butter, are usually shipments sent here during seasons of emergency or shortages and would not under ordinary circumstances prove profitable to the shippers. Occasionally an importation of a very high quality of produce which sells on its merits—as, for example, some shipments of Danish butter last year—attracts wide attention and provides a healthy spur to American farmers to do their best to improve their quality and output. Then, too, the seasonal character of the supply of butter may invite importations at the low point of production.

Canadian farm produce, and a few rather important items such as Asiatic peanuts, have competed actively at times in some of the northern markets. Here supremacy on the markets will probably be determined, in the long run, by the factors of standardization, use of good business methods, costs and profits. American farmers will surely fight to hold these markets unless they find that it pays them better to raise something else. Although the farmers do feed and clothe the world, they are not in the business for altruistic reasons, but, in most cases at least, are farming to make a living. They will not, in normal times, produce certain kinds of crops merely that the country may be self-sufficing in all food matters.

It has been pointed out that the

United States is virtually made up of two great empires—an empire of agricultural production lying to the South and West, and an empire of food consumption lying to the North and East. Our great agricultural lands lie in one direction, our great cities of customers lie in the other. To bridge the two, great distances must be covered, and present indications are that the freight rates over these great distances will not, perhaps cannot, soon again be at the old figures. Meanwhile, ocean freight rates across the Atlantic are much lower than railroad freight rates. This is a fact that American farmers must recognize fully in making their farming plans. It seems probable, indeed, that permanently high inland transportation rates and permanently high costs of heaters, coolers, and ventilation may make permanent changes in our agricultural geography.

Test Shipments

Partially to offset this tendency, the Department of Agriculture is cooperating with Pacific Coast states, growers' organizations and large shipping firms in the making of test shipments of fruits and vegetables through the Panama Canal to the Atlantic seaboard cities. Such questions as rates, time involved, keeping and carrying conditions in the holds of the ships, are studied. So far, the results of these test shipments have been promising.

New conditions resulting from changes in transportation will bear careful watching by farmers and by all who are interested in our big food problems. Facts of yesterday are not necessarily facts today. What was best yesterday may be out-of-date today and may bring disaster tomorrow. Low-cost ocean routes favor shippers on the Pacific Coast and sometimes offer new competition for eastern growers. High-cost freight on the railroads tends to handicap producers in the inland regions, but on the other hand strengthens their position in their neighboring city markets. Apart from the influence of increased freight charges, the tendency must be toward shorter hauls as population grows and as larger market centers develop in producing sections now dependent on long-distance shipment. The most advanced methods of growing and handling will be needed to hold faraway markets under the freight and distance handicap.

Many of the same considerations that apply to foreign shipments apply to long-distance shipments of domestic produce. Climate has more effect on quality than is usually realized. It is true that California, Washington and Oregon growers of perishables have exceeded central and eastern growers in specialization, cooperation, organization, standardization, advertising and all those processes and methods that go to make up modern salesmanship and that this fact has done much to place and keep their citrous fruits, apples and cantaloupes on the markets of the world. But the early season in the irrigated California valleys gives their cantaloupes a great advantage, for shipments begin when the country has had no cantaloupes for many months and it is nearly a month later before even Florida melons come on the markets. The unbroken, sunny skies of California during the growing season, the application of just the right amount of water by irrigation and a temperature reaching 100 degrees Fahrenheit each day in the Imperial Valley, the great California cantaloupe region, combine to put on the eastern markets a cantaloupe to be relied on in quality and flavor. Melons grown under varying conditions of temperature, rain and sunshine naturally vary in quality. Remembering the disappointments we have all had in buying melons, it is not surprising to know that dealers and housekeepers insist, more and more, on buying brands that they have come to recognize as standing for uniform quality, even though they pay a higher price to cover the costs of the long journey across the continent.

The very early season of Louisiana strawberries, of Georgia watermelons and peaches, and of Texas tomatoes explains their presence on large markets a thousand miles away, even when transportation rates are high and shipments must be made under ventilation by express.

Consumers' Preferences

Market preferences, in themselves harmless and interesting, serve to explain some long shipments and cross-hauls, often erroneously charged to mismanagement of the shipper. Red onions are favorites in New Orleans, but almost invariably bring lower prices than white or yellow onions on other markets. Other large cities discriminate against small onions, but the foreign population in New York City will pay an extra price for small onions for boiling. Dark red cranberries are preferred in New York City, but middle-western markets think they are over-ripe and insist on the paler cranberries. Thus, the cranberries grown in New Jersey, which are mostly light colored, cannot be sold to advantage in the near large market of New York, but must be shipped to Pittsburgh, St. Louis, and other large cities farther west where they are especially wanted. These preferences seem meaningless, but farmers and shippers have found repeatedly that losses incurred in trying to sell goods regardless of consumers' preferences are often much greater than the costs of long-distance shipments and cross-hauls even at present freight rates.

Natural surplus and deficit areas occur in this country and in the world and the differences in these areas have been intensified by the growth and drift of population and the development of industries. Through developments of modern life, agriculture has become commercial. In thus producing for great markets, farmers individually, in groups and by large regions have found that under normal conditions they get best results by specializing in certain crops or lines of farming for which they have special aptitude or to which their climate and conditions of farming are best suited. This necessarily means that we will ship great quantities of food, but also that we will bring in food products from afar.

More Authority for Food and Drugs Rulings

GREATER authority for the joint committee on definitions and standards in its rulings as to the purity of foods and drugs will be sought as a result of the convention of the Central Atlantic States Association of American Dairy, Food and Drug Officials which met in Washington, D. C., April 23-25. A resolution was adopted to memorialize Congress through the secretary of agriculture to this end, and further to secure appropriations allowing more frequent meetings of the committee. Other sectional associations are expected to take like action. The committee at present consists of nine members appointed by the secretary of agriculture.

Ole Salthe, director of the Bureau of Food and Drugs, Department of Health, New York, was chosen president of the association for the coming year. I. H. Shaw, of the New Jersey Department of Health, vice president; D. M. Walsh, chief of the Baltimore Station of the Bureau of Chemistry, United States Department of Agriculture, secretary. Two additional members of the executive committee named were A. L. Sullivan, food and drugs commissioner of Maryland, and Dr. C. J. Vaux, director of public health, Pittsburgh.

As a step toward more harmonious and effective administration of the state and federal laws in the Central Atlantic territory, the convention appointed a committee on uniform standards and regulations to study differences between the various state laws and make recommendations for needed changes to the joint committee. This committee consists of C. S. Brinton, chief of the Philadelphia station of the Bureau of Chemistry, United States Department of Agriculture; W. W. Scofield, chief of the Food and Drugs Bureau, New Jersey Board of Health; Dr. J. H. Shrader, Board of Health, Baltimore; A. L. Sullivan, foods and drugs commissioner of Maryland; and Dr. H. H. Hanson, state chemist of Delaware. Other sectional associations have formed similar committees.

The next convention of the association will be held in New York City.

BOOK REVIEWS

Health Building and Life Extension. A Discussion of the Means by which the Health Span, the Work Span, the Life Span of Man Can Be Extended. By Eugene Lyman Fisk, M.D., Medical Director Life Extension Institute of New York. Macmillan Company, New York. $3.50.

This book is the outgrowth of a survey of health conditions in industry, undertaken by the Life Extension Institute for the Committee on the Elimination of Waste of the Federated American Engineering Societies, at the instance of Herbert Hoover.

Dr. Fisk has prepared the material for publication and divides it roughly as follows: Part I, Physical State of Civilized Man; II, The Problem of Industrial Health and Working Capacity; III, Preventive, Remedial and Constructive Measures.

That food plays a most important part in the administration of a constructive health program Dr. Fisk is one of the first to agree and he devotes some important chapters to its consideration.

Food deficiency is studied in detail, suggestions are given for adjusting the intake of food to individual needs and the evils of a one-sided diet are pointed out.

Food excess is likewise discussed, with helpful directions as to avoiding and overcoming obesity.

The book closes with an exhaustive analysis of the place of the health center in community betterment.

The Health of the Runabout Child. By William Palmer Lucas, A.B., M.D., LL.D. Macmillan Company, New York. $1.75.

The problem of diet cannot properly be separated from that of the general hygiene of the body; therefore those persons who wish to ascertain what Dr. Lucas has to say about feeding the "post-nursing and pre-school" child should read carefully the chapters dealing with Heredity, How the Public Can Help, Play and Mental Snags.

It is with the chapter entitled "The Food He Needs," however, that we are at present concerned.

The first of many services rendered by the book is the recognition that this particular age, the period beginning with weaning and closing with attainment of "school-age" honors, requires special care in feeding. The child may have been ever so carefully nursed or bottle fed and the effects of this care be destroyed during the time that he is a "runabout," or again, because of the mistakes made during this very period the value of the expertly planned school age diets may be diminished or lost.

Dr. Lucas gives very clear directions about what to give the child, both as to selection and quantities; he points out pitfalls and indicates short cuts to the open road of perfect nutrition. In the matter of meal planning the book gives a series of menus, the breakfasts, dinners and suppers for this age being carefully worked out.

Perhaps a word of caution might well accompany any notice of these food chapters. The supper menus are sometimes a bit "hearty" for going-to-bed meals, unless the child is in absolutely normal health. On the other hand, Dr. Lucas is so careful to indicate the exact size in tablespoonfuls of the more substantial foods, that the home dietitian need never be led into the mistake of over-feeding. The modern method of feeding is undoubtedly that of scientifically administering a dietary composed of a variety of foods, making adjustments by varying the size of portions, rather than by eliminating any one or two foods entirely, and Dr. Lucas has the ability, knowledge, and experience necessary to enable him to do this successfully.

The Exclusive Agency. New York University Bureau of Business Research, New York.

A study in the marketing of manufactured products, based upon questionnaires and interviews furnished principally by the sales managers of manufacturing corporations. The advantages and disadvantages of the exclusive agency have been studied by the bureau and a special effort has been made to determine the kinds or classes of product best marketed through exclusive agents. The questionnaires were planned not only to show how generally sales managers use exclusive selling agencies; but also to reveal all the important considerations arising from such a method as they affect either the manufacturer or the agent. The replies brought out a number of other pertinent facts indicating the advantages of the system. Among the companies upon whose statements the report has been based are the Crescent Manufacturing Company, Ralston Purina Company, Walter Baker & Company, H. O. Cereal Company, the Log Cabin Products Company, and the Merrell Soule Sales Corporation.

Farm Meats. M. D. Heiser, B.S.A., M.S. Macmillan Company, N. Y. $2.60.

In the first three parts of this book the author discusses pork, beef and mutton, describing methods of selection for butchering, the dressing, killing and cutting, and, in the case of pork, the curing, smoking and rendering processes. Part IV discusses ways of preserving meat without curing, and by-products. In a chapter on methods of teaching the meat course, the author describes the system of lectures, demonstrations and practice by which he has given instruction in Iowa State College. Illustrations show each phase of the operations described and all the meat cuts.

Milk Production and Manufactured Dairy Products in New York State for Year 1921. Bulletin 145 of the Department of Farms and Markets of the State of New York.

The figures used in making up this report were taken from the books of the companies where the milk was received; they do not include milk sold or delivered by the small retail dealers, nor the milk used or manufactured on farms. They represent the milk production from 89,978 dairies during 1921. A list of milk plants and establishments is given, showing the products shipped or manufactured at each plant.

Inorganic Chemical Synonyms. Elton Richmond Darling. D. Van Nostrand Company, New York. Second Edition. $1.00.

This book, composed of articles which have appeared from time to time in "The Chemical Engineer," is prepared especially for students, but should prove useful as a reference book to chemists and others as well. It contains tables of the elements, atomic weights, specific gravity and comparisons of the various systems of weight, capacity, volume and temperature measurement, together with a list of the more common chemicals and their synonyms.

Crain's Market Data Book and Directory of Class, Trade and Technical Publications. .G. D. Crain, Jr., Chicago. $5.00.

This is the third edition of this directory, which aims to give the statistical and marketing date regarding each industry, trade or profession. Each classification is followed by a list of publications in the field.

Homemade Apple and Citrus Pectin Extracts and Their Use in Jelly Making. Minna C. Denton, Ruth Johnstin, and Fanny Walker Yeatman. Circular 254 of the United States Department of Agriculture, Washington, D. C.

Household methods of extracting pectin from apples and the white peel of oranges and lemons, and recipes for making various kinds of jelly by the addition of these ingredients.

These homemade extracts make possible the use of fruit which might otherwise be discarded, either because it is too ripe or because it is naturally lacking in pectin at all stages of ripeness, and therefore not suited to jelly making. Directions are given for making jellies from cherries, lemons, mint, peaches, pineapples, rhubarb, strawberries and sweet vinegar with the addition of pectin extract.

THE CONFERENCE TABLE

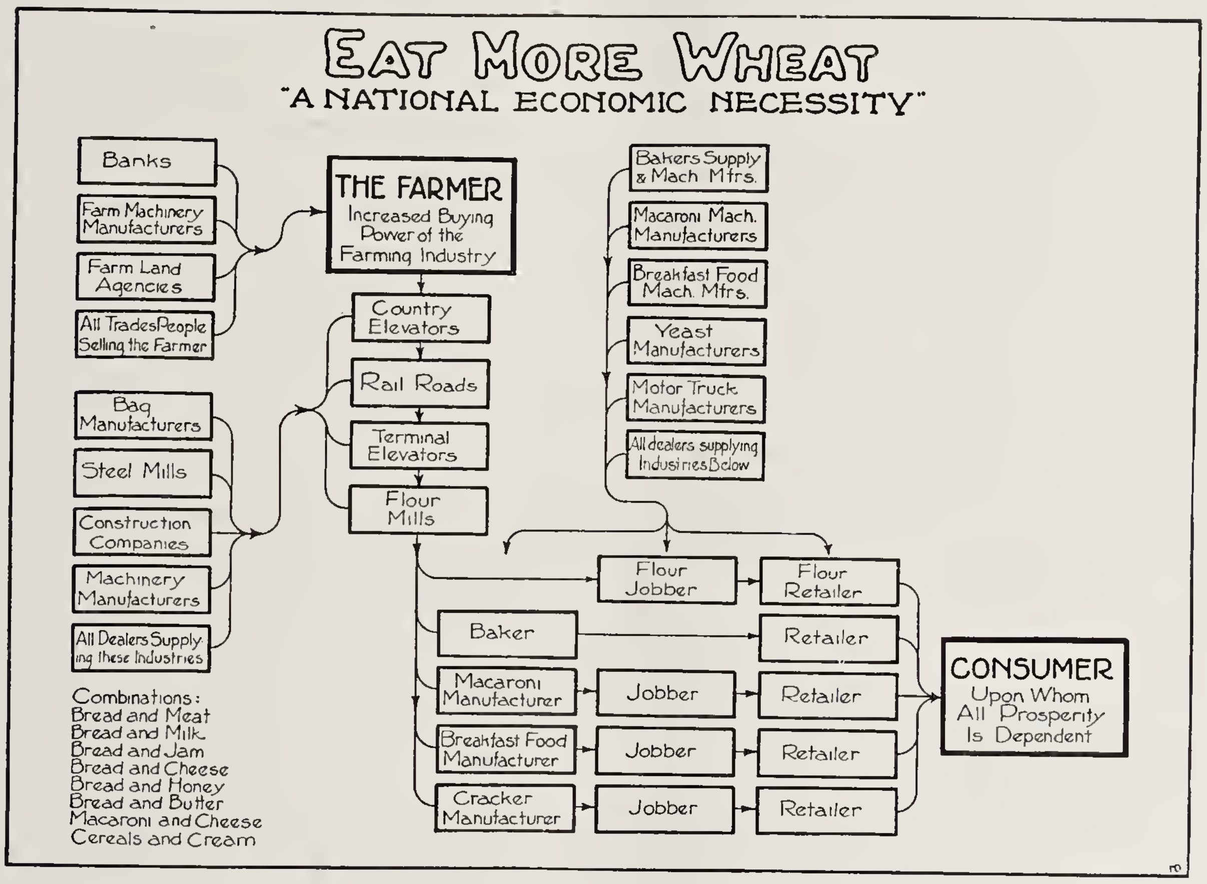
The "Eat More Wheat" Campaign and National Betterment

By JAMES F. BELL

Vice-President, Washburn-Crosby Company

OUR industry may be said to be concentrating on the immediate problem of finding a profitable market for farmer's wheat and at the same time of restoring to the American diet those sound, wholesome, healthful, economical things that go to make a thrifty, prosperous country.

On the present basis of land values and labor costs in this country, it is a physical impossibility for us to grow wheat and sell it profitably in the open markets of the world in competition with other countries whose land values, labor costs and standards of living are far below our own. This condition will continue so long as we produce a surplus of wheat. It is not a question of finding a market for wheat. One already exists. But the price this market offers is making trouble for our wheat producer. What we want to find is a profitable market, and this does not lie beyond the confines of this country. While wheat is fourth in value of all farm products and enters into our commerce more than any other commodity with the exception of cotton, the price of this important basic food has fallen almost to a pre-war basis. This is a most unfortunate condition and completely dislocates the farmer's buying power, since the things he has to purchase are on a much higher than pre-war basis. His returns are, in fact, below the cost of production and he is naturally dissatisfied and discontented and is expressing himself politically in a way that some sections of the country find it hard to understand.



An outline of the "Eat More Wheat" Campaign

A Slice of Bread a Day

To reduce production and thus establish an equilibrium between supply and demand is a matter of time and education and one of very delicate adjustment in other commodities that would be affected. On the other hand the average surplus of one hundred and seventy million bushels annually is consumable. When reduced to terms of individual consumption it is no more than two ounces additional at each meal. Taken in one form of wheat product or another it is a little less than sufficient to make a slice of bread. This is all that stands between the public and the measure of national prosperity that would come through the betterment of some two million farmers who grow wheat and to whom wheat is cash money and in many cases the sole source of income.

It is not alone the wheat farmer who is affected. Wheat is the great vehicle through which all primary products of the farm reach the consumer. The making of wheat products requires milk, butter, eggs, corn (in the feeding of hogs from which lard is obtained for shortening), barley, and rye. Wheat products are never eaten alone but always in combination with such foods as milk, butter, cheese, or jam.

Thus it is evident that all sections of our farming population will be benefited and the consumer will find both added health and saving in the increased use of those things which bring with them the wealth of the farm. Our industrial sections of the country are equally interested since continued employment is dependent upon purchasing power—not the purchasing power inherent in industry alone but that which is in one hundred per cent of our population. Bring restored prosperity to the farmer and prosperity to the country surely follows.

During the war we were taught the necessity of saving wheat and the significance of this successful endeavor was clearly demonstrated in the final results. Today with a surplus for which we must find a profitable market in order to restore prosperity to our agricultural population it becomes an opportunity, a privilege and a benefit to the American public to reverse the process through this small additional consumption. Here is a simple, practicable way out of a great economic difficulty, a problem which is as serious in its own particular field as the war was in its own way.

Nation-wide Response

The governors of several states have actively espoused this movement and are urging active groups in their respective states to further the advancement of the idea. It presents a wonderful opportunity for coordinated advertising among those elements which touch upon the farmers' product from the time it leaves the farm until it reaches consumption. The heart of the idea must be to glorify wheat products—not the firm nor brand; to glorify the American prosperity that will come through restoring purchasing power to our producers and to glorify the health and saving that comes through the increased use of this food and the foods that accompany it into consumption.

There have been numerous attempts at price fixing, government subventions and subsidies to help out the producer. But with an aroused public consciousness this plan for eating the equivalent of an extra slice of bread at each meal will do what all these have failed to accomplish. The plan is already bearing endorsement not only of the farm organizations and industrial elements but of men of national prominence who in their positions of well recognized authority on these subjects will carry much weight with the public. It is economically sound and well within the realm of accomplishment provided every one will not only adopt the slogan of "eat more wheat" but actually practice it and get others to do likewise.

Canada's Pure Food Regulations

American Exporters May Avoid Delay and Trouble by Use of Pure Food Certificate

By FELIX S. S. JOHNSON
United States Consul, Kingston, Canada

THE fruit and vegetable certificate —or what is commonly known to the trade as the pure food certificate, should accompany all food products whether naturally grown, manufactured or processed in any form. For instance, canned fruits and vegetables, dried milk products, evaporated and dried fruits, shelled nuts, and in fact all foods meant for human consumption must be accompanied by this pure food certificate. A strict adherence to this regulation, customs officials state, would avoid a great deal of unnecessary trouble at the points of clearance.

The certificate as required in the importation of fish is known as the fish certificate, and is in accordance with section 12 (h) of the Meats and Canned Foods Act. This certificate must accompany all classes of fish products that are hermetically sealed or preserved in brine.

The certificate as required for meats and meat products, canned or otherwise, is somewhat more complicated. Meat and meat products from the United States must be accompanied by a Bureau of Animal industry certificate commonly known as B. A. I. Without such a certificate, goods cannot be permitted entry, and importers in this connection should notify their shippers.

In regard to the invoicing of goods by exporters in foreign countries selling to Canadian importers, invoices in duplicate must be mailed to the consignee in Canada. These invoices state the marks and numbers on packages, quantities and a description of the goods, the country of origin, the fair market value as sold for home consumption at the time shipped, the selling price to the purchaser in Canada; a column is left blank by the shipper where the appraiser of customs will affix the rate of duty.

At the foot of the invoice the shipper signs the attached certificate, asserting that the said invoice is in all respects correct and true; that the said invoice contains a full and true statement showing the price actually paid or to be paid for the said goods, actual quantity thereof and all charges thereon; that the said invoice also exhibits the fair market value of the said goods at the time and place of their direct exportation to Canada and as when sold at the same time and place in like quantity and condition for home consumption in the principal markets of the country whence imported directly to Canada, without any discount or deduction for cash, or on account of any drawback or bounty, or on account of any royalty actually payable thereon when sold for home consumption but not payable when exported, or on account of the exportation thereof or for any special consideration whatever.

That no different invoice of the goods mentioned in said invoice has been or will be made or entered into between the said exporter and purchaser or by any one on behalf of either of them, either by way of discount, rebate, salary, compensation, or in any manner whatsoever other than shown in the said invoice.

That each article on this invoice is bona fide, the produce or manufacture of the country specified on the invoice in the column provided for that purpose.

An exporter of canned goods to this country, for instance, does not invoice the contents and the container separately, for the reason that they are shipped in the ordinary way in which they are sold on the home market. But if the product being exported is usually sold in bulk quantities in its own domestic market, and the Canadian importer especially asks that the same be put up in packages, then in that case, the containers and contents must be invoiced separately. By way of example a shipper in a foreign country selling in this market canned goods or jams or fruit in jars is only required to fill out the invoice in duplicate as described here and mail it to the consignee on this side. The proper certificates, too, as described above, must be attached. The Foodstuffs Division of the United States Department of Commerce offers its facilities to exporters desiring to enter the Canadian market.

New Cocoa and Chocolate Association Formed

The Association of Cocoa and Chocolate Manufacturers of the United States was formed recently at a gathering of manufacturers in that industry at New York, and officers were elected as follows:

President, H. C. Gallagher, president of Walter Baker & Company, Ltd., Dorchester, Mass.; vice-president, William F. R. Murrie, president, Hershey Chocolate Company, Hershey, Pa.; treasurer, William H. Watt, vice-president, Hooton Cocoa Company, Newark, N. J. B. K. Wilbur, vice-president, H. O. Wilbur & Sons, Philadelphia, was elected as a member of the executive committee together with the president and vice-president.

Sun-Maid Raisin Growers Refinanced

Successful refinancing of the Sun-Maid Raisin Growers of California, the greatest cooperative marketing association in the world, has been announced by Ralph P. Merritt, its managing director.

The entire $2,500,000 of new financing required to place the fifteen thousand raisin growers of the San Joaquin Valley on a firm financial footing was raised by public subscription.

The $2,100,000 offered by raisin growers and business men of the San Joaquin Vlley was supplemented by $150,000 raised by the Chamber of Commerce and investment bankers of Los Angeles, and $250,000 by the business men of San Francisco under the leadership of the San Francisco Chamber of Commerce.

Under the new system, the requirements of the Capper-Volstead Act have been met and the most desirable principles of cooperative marketing have been maintained.

Model Milk Ordinance Proposed in New York

The model milk ordinance recommended by the New York State Department of Health and the New York State Conference of Mayors, and now under consideration by the Albany Common Council, would eliminate all Grade C milk and also prohibit the sale of Grade B raw milk. It would permit the sale of Grade B pasteurized milk, certified milk and Grade A raw and pasteurized. Since the higher grades of raw milk are limited in production and sale, the model ordinance would in effect bring about the Pasteurization of the greater proportion of all milk sold in any city which adopts these regulations.

The ordinance also forbids the sale of dipped milk, requiring that all milk be sold in bottles, filled and capped at the place of production or at the collecting and distributing station.

EDITORIAL

“Putting the ‘Eat’ Back into Wheat”

NEW times, new responsibilities! How conscientious we were about “wheatless days” in 1918 and 1919! Do we realize that we have a new opportunity for national service if we work with equal fervor for “wheatful days” in 1923?

To be sure there is lacking the spur of war-time conditions. It required a fairly callous person to partake casually of a slice of bread, knowing the while that wheat was needed for our men. On the other hand the shame-faced hiding of a consuming hunger for “a piece of bread and butter,” a longing not to be appeased by the best corn bread ever baked, testified to our sincerity and our wish to do our “bit.”

Today the task is at once easier and more difficult: easier in that it involves a return to the old “standby,” the bread and butter that changes the staff of life into a gold-headed cane; more difficult in that any constructive work along this line means systematic thought in helping, not the splendid sacrifice of soldiers but the more prosaic and plodding efforts of practical business men.

Those whose business it is to KNOW tell us that the after-effects of war prohibition of wheat is holding over to such an extent that the situation is one requiring concerted effort on the part of individuals and groups.

The European market having collapsed, there came the necessity for a plan that should make it possible for us to absorb our own wheat surplus.

On another page of this issue of The American Food Journal we give the story of this plan as it has been perfected.

One of the many gratifying features of the “Eat More Wheat Campaign” is the fact that manufacturers of various food products are seizing the opportunity to do some cooperative advertising. “Live and let live” is a sound principle in the food field, as elsewhere. The packer or butter man or milkman who advertises his products as “going well with bread,” literally casts his bread upon the waters.

In the issue of “Baking Technology” for April 15, we read: “It isn’t any one man’s task. It isn’t any one group’s task. It isn’t the task of the advertisers alone.

“It is the farmers’ task, the grocers’ task, the politicians’ task, the President’s task, the governor’s task, the teachers’ task, the industrial leaders’ task in every line.”

Let’s go!

The Food Manufacturer and Child Health

IN the January issue of The American Food Journal was told the story of the amalgamation by Mr. Hoover of all the leading child welfare organizations into the present American Child Health Association.

Today Secretary Hoover is addressing at least one of the great food trades asking: “What is YOUR branch of the food industry doing to further the feeding of America’s undernourished children, those children on whose shoulders rests the future of the Republic?”

It is but reasonable to suppose that the same question will be put to all the food trades.

What is the answer?

Ask a baker and he will reply: “WE are making possible the ‘super loaf’: we are stressing the necessity for scientific research in nutrition; we are conducting careful experiments with yeast and its place in the diet; we are taking care to add a generous supply of milk to our dough: we are advocating the reasonable use of bran and whole grains.”

Ask a packer and hear:

“WE have organized a great ‘Institute’ for the purpose of setting in motion machinery that shall enlighten the citizens of America as to the place of meats in the diet.”

From a fruit grower:

“WE are, by means of scientific advertising copy, spreading the knowledge of the vitamine and mineral content of fruits.”

And so we might go on.

It is customary to think of the business world as a place of practical methods where the dreamer of dreams must first “deliver the goods” if he is to have even casual listeners.

As a matter of fact the man of successful action must have about him a capacity for envisioning the results of his own work.

May not one dream of the time when there will be something akin to a “Food Manufacturers’ Institute of Nutrition,” wherein the results of research and activity from all divisions of the field may be pooled, and from which each manufacturer may go forth to improve his product, minimize his overhead and nourish the community in which he dwells?

But we must “dream true”!

Getting “For Value Received” from Your Product

AS part of dessert for an already over sweetened meal raisins enjoyed popularity; as carriers of iron for underfed humanity they have risen to honorable heights in the food scheme.

Yeast has always served well the housewives or bakers who were responsible for turning out the light and toothsome loaf. Today it serves these and dietitians as well, for members of the latter group are following eagerly the results of research that is to settle finally the several ways in which yeast contributes to complete nutrition.

Now raisins were carrying iron and yeast was supplying the water soluble vitamine in the old days, as now, but the raisin growers and the yeast distributors were ignorant of these facts, thereby losing just so far the possible gains that would have resulted from a more complete knowledge of their respective products.

True, dietetics had not then supplied the data on which our present day educational advertising is being founded. The point is, however, that some manufacturers are slow to cash in on all the good points of their products, fearing in some cases the stigma that may attach to a visionary “highbrow.”

The moral is, be sure that you keep yourself supplied with information in regard to the rapidly developing science of foods: it may mean many thousands of honestly earned dollars!

Do You Know

of such a proposition

1 A food product that has a future but lacks capital to promote it?

2 A grocery specialty that serves a useful purpose and fills a needed want but requires finances to exploit it?

3 A going concern in the food or grocery specialty business that can be expanded but for some reason wants to sell out?

We are at present making a successful grocery food specialty that sells nationally. We would like to expand our activities in this field by acquiring some new idea, or some item that possesses all the elements of success but lacks adequate finances, or some already existing approved business that will consider selling outright.

Any proposition that we consider must be on the basis of our buying it outright.

J. H. KARAKIS CO.

123 W. Madison St. Chicago, Ill.

FOOD AND HEALTH EDUCATION

A Department of The American Food Journal
Edited by WINIFRED STUART GIBBS

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Building Up Underweight School Children

Malnourished Pupils in San Francisco Schools Show Improvement under New Program of Nutrition Work

By ELLEN M. BARTLETT
Supervisor of Home Economics in San Francisco Public Schools

AS in other communities, health-teaching is not altogether a new thing in our schools. We have had a physical education department for some time, school doctors and school nurses have been on the school staff for more than a decade, the grade teacher has tried to make her teaching of hygiene concrete and practical and the home economics woman has long felt her responsibility as a teacher of right living.

About ten thousand children partake of the mid-morning lunch which is served in the public schools of San Francisco

Two years ago, however, we began a program of more intensive health teaching, the San Francisco Tuberculosis Association being responsible for the inception of the movement.

With the permission and cooperation of the Board of Education and the Board of Health, the Tuberculosis Association made a survey of the health of San Francisco school children. A doctor, a dentist, a nurse and a clerk were on the "survey team," and 44,500 children were weighed, measured and examined. When the reports were tabulated it was found that a third of the children were underweight, 21 per cent being 7 per cent under-weight. Almost half of the children had posture defects, a third had diseased tonsils, a fourth had adenoids, 87 per cent had teeth in need of care.

This report was something of a shock to us, and we were surprised to learn that some of the schools in well-to-do neighborhoods had more cases of malnutrition than some others in districts that have long been the happy hunting ground of the social worker.

Before the school health survey was finished, the Tuberculosis Association started a campaign of education. This seemed to have two aims, first to show to the community the existence and extent of malnutrition among children, and its possible remedy, and, second, to train the people whose cooperation was needed to put over a health program.

Several prominent speakers on

child nutrition were invited to address representative groups on the subject. Mrs. Ira Couch Wood spoke several times on the nutrition work done by the Elizabeth McCormick Memorial Fund. A series of nine lectures was given to teachers on child health and nutrition, most of them by eminent child specialists, and in November, 1921, Dr. William R. P. Emerson with his assistants conducted an institute for teachers, public health nurses, social workers and others who wished to qualify to teach nutrition classes.

In the meantime, we started mid-morning lunches in the schools. This work was placed under my supervision and I was given expert help. We now serve bread and milk or crackers and milk in practically all the elementary schools. At present more than ten thousand children are served daily. The children pay five cents a day and receive a half pint bottle of milk with a straw. In about half the schools bread and butter are served also. In the others crackers are used. We serve several kinds of bread and five kinds of crackers.

The bakeries send us the bread sliced and wrapped, and the dairies do not require us to wash the bottles. This is a great help, and enables us to serve mid-morning lunches in schools where lack of space and equipment would make it impossible to manage otherwise. Even at that, the bread and milk lunches call for much cooperation and not a little work from teachers and pupils.

The money is collected by the teachers and given to the representative of the bank who collects the children's savings each week. It is placed in the "Bread and Milk Fund" of which I am trustee, and all bills come to me. Each school's account is kept separate and the little profit from each serving is used by the school for feeding underweight children who cannot afford the morning lunch.

Eighth grade girls wash off the tops of the bottles and prepare the crackers or butter the bread. This is done before school hours, and we make a point of promptness. A committee of boys handles the milk crates and collects milk tickets.

In one primary school the work connected with the mid-morning lunches is done by the "ungraded class," and done well. It is pathetic to see these over-age, subnormal children enjoying their position of usefulness and prominence.

These children are presenting a play which demonstrates the importance of vegetable foods

The Board of Education permitted the teachers of the home economics department to take Dr. Emerson's course, although it rather interfered with their regular work for the three weeks that the institute lasted. Since that time they have supplemented this course with other work along the same line, and several teachers whose program allowed a little lee-way have taught nutrition classes. There are now twenty-three nutrition classes of the Dr. Emerson type, half of them taught by my teachers. This work is under the supervision of Lillie A. Lindsay, a public health nurse who has been recently employed by the San Francisco Board of Health but who has her office with the Tuberculosis Association, and reports to its Nutrition Committee.

Of the 263 children in the nutrition classes last term 222 gained, the percentage of gain being 3.4 per cent on an average. One of the curious things noted was that the children of foreign parentage gained more in height on an average than the children of American-born parents. We imagine that this is because these children of Latin extraction received milk for the first time in more adequate amounts while the American children had been getting milk at home before they joined the nutrition classes. We also found that children who had been made "free to gain" by having their tonsils out made the greatest improvements in weight, and we are wondering if the better care that they got after the operation did not help.

Besides the nutrition classes, Miss Lindsay is supervising another type of health class. These classes are taught by the kindergarten teachers and the "opportunity class" teachers, who have shorter hours or more elastic programs. These teachers, who are also subsidized by the Tuberculosis Association, weigh all the children in their school who are 10 per cent or more underweight every fortnight, talk to them about health habits, cooperate with the school nurse in trying to persuade the parents to have physical defects corrected, and otherwise work out a health program for their schools.

In one school, in a foreign neighborhood, an interesting piece of research work is being carried out, to determine, if possible, what factors effect malnutrition in school children, and what effect the seasons have on their growth.

In twelve schools another type of health teaching was started last fall by Mrs. John Collier, who is connected with the Child Health Organization. In these schools health habits were taught in connection with every subject. Classes are being continued with some variations, by Mrs. Daisy Hetherington.

The home economics teachers of my department have been most interested in all these plans for the better health of school children. They have been among the first to attend the lectures, and demonstrations of health teaching, and have taken part in most of the work that has been organized. They are responsible for the management of the mid-morning lunches in the schools where they teach. They help with the monthly weighing of the underweight children; they teach nutrition classes, and they are always to be counted upon to get up "food shows" and to costume health plays.

Our usual work in garment-making and in food preparation has always included a good deal of instruction designed to foster more wholesome living and this newer plan of health teaching has added zest to our older lessons. Material prepared for a domestic science lesson has been used in nutrition classes, and an excellent exhibit showing food values, collected and organized for the nutrition class of the Crocker Junior High School, has been made the basis of several domestic science lessons. Health games, introduced when the lesson is over and when the "house-keepers" are wiping up the last crumb, sometimes clinch facts in the minds of pupils who forget very easily the matter presented in the text-book.

Dr. Eugene R. Kelley, Massachusetts Commissioner of Public Health, says that the public health movement was developed in three fairly definite eras or periods. That is, the emphasis was placed on different points at different times. The first period—roughly, from 1850 to 1880—he calls the era of sanitation. It was principally concerned with environment, and its typical exponent in the public health ranks was the sanitary engineer.

The second period, which he calls the era of infectious disease work, began about 1870 and was in full sway, largely over-shadowing all other public health concepts for about thirty years. This era was chiefly concerned with bacteriology. Its key word was "the germ." Its typical exponent was the laboratory research worker.

The third period, just now beginning, may be called the era of hygiene. It marks the return to first principles. It is chiefly concerned with the human machine, the person. Its key word is education. Its typical exponent is perhaps the public health nurse.

We know that there is today sufficient scientific knowledge extant to enable us to prolong the average of human life by many years, and to make these average years infinitely more enjoyable, but we do not live up to this knowledge. "Knowledge comes but wisdom lingers" in health work as in everything else. The object of this campaign of education is to make health knowledge common, and the practice of health habits popular. In this work the home economics teacher joins forces with the public health nurse and with the other agencies that are trying to teach people wholesome living. It is our proud hope that we will make the San Francisco school children the healthiest youngsters in the United States.

Keeping House At School

A New Conception of Home Economics Carried Out Under the Direction of Frances Hull, Supervisor of Home Economics, Baltimore

By IDA WHOLEY and ELIZABETH MALE
Teachers in Baltimore Junior High Schools

DURING the year 1921 the home economics work in the public schools of Baltimore underwent an important change. Up to that time the stress had been placed upon the technique of stitchery in the clothing classes and upon chemical composition and cookery processes in the food classes. The courses in home economics in the junior high schools have been reorganized with the following definition of home economics in mind: "Home economics is a subject that centers around the problems of the home and other institutions whose problems are of a similar nature. It includes a study of food, shelter, and clothing viewed from the standpoint of hygiene, economics and art, and a study of the relations of the members of the family to each other and to society." The home economics courses are also planned in accordance with the general purposes of the junior high school. An effort has been made to provide a greater variety of household activities in the school for the girls of this age. Cookery and sewing are two important phases of home work, but they are no more important than many other home problems.

The first important step in the change was the provision of space for a modern housekeeping apartment in seven junior high schools. It has been found that the girls take a greater interest in home problems when these problems are carried out in rooms which more nearly approximate real home situations than they do when the problems are carried on in the regulation food and clothing laboratories.

For purposes of administration it was necessary to assign certain definite groups to the work in the school apartment, for this space, which is equal to a class room, must be used 100 per cent of the time. Each class is assigned to this work for one hundred and eighty minutes a week. The high eighth grade was selected for this work.

The girls' work began in the apartment when only the walls were finished. Definite projects were planned by the classes. Some of the first of these were as follows:

1. Finishing the floors of the living room, dining room and bed rooms. Use of crack filler, boiled linseed oil, shellac and wax.
2. Treatment of linoleum in kitchenette and bath rooms with varnish or shellac.
3. Planning for selection of hangings, draperies, curtains, for specified allowance, measuring for amounts.
4. Actual selection of materials and making of the hangings, draperies and curtains.
5. Study of floor coverings, selection of rugs.
6. Selection of furniture.
7. Planning kitchen equipment, both large and small; selection of equipment.
8. Planning small equipment for dining room.
9. Planning, selecting and making bed linen, table linen, centerpieces, luncheon sets, cushions and towels.
10. Selection of pictures, candle sticks, and other little things to make the apartment attractive.
11. Necessary cleaning problems.
12. Preparation and care of window boxes.

No one class carried out all of the projects, but each class carried out many of them. Other projects were carried out in individual schools, but those listed were carried out in practically all of the schools in different ways.

In addition to the many projects which required activity, other kinds of home problems were taught. The girls were taught to recognize certain factors in the selection of a home, considering location from the standpoint of health, convenience and outlook. They were taught to note the arrangement of rooms with reference to use, convenience, ventilation, and plumbing. The study of wall finishes was also included and many other problems of that nature.

Many of the lessons in selection were carried out by means of field trips to some of the leading department stores and furniture stores. The educational directors and department heads have gladly planned demonstrations according to the teachers' suggestions to show the girls in a practical way how to apply principles of selection. The girls have had lessons in the stores.

(1) on the selection of materials for draperies, hangings, curtains, linens,

(2) on the selection of china and kitchen utensils,

(3) on the selection of furniture, rugs, and

(4) labor saving devices.

Stores have loaned labor saving devices and other equipment for demonstration in the schools.

The Parent-Teachers' Associations have been intensely interested in the work of the girls in the apartments. They have been very generous in their contributions of money in order to make it possible for the girls to buy pictures, pottery, candle sticks, books, magazines, vacuum cleaners and other things for the apartment. In several schools last year the graduating classes gave their class gift to the practice apartment. The classes themselves have made money through sales and bazaars for the benefit of the apartments. Money has been given from school funds to buy "extras" to make the apartment a real "school home."

One argument which has been advanced against apartments in schools is that girls are required to clean already clean rooms. In other words, girls are asked to go through pointless motions. This has been found to have no foundation, for the apartment is used as a recitation room and study room, and it is used for meal service for other classes. The bed rooms are often used as rest rooms for girls or teachers who are ill. The girls have used the bath rooms after school hours if they wished to do so. The classes have entertained their parents, teachers and sometimes their classmates, for hospitality is emphasized as an essential feature of real home life. In fact the apartment is in constant use. It has never been necessary to clean "clean" rooms. It has been difficult to find time to do all the cleaning which is necessary.

Another question which is always asked is, "What will you do for problems in the second year when you have your furniture and rugs?" The answer is that there are an equal number of projects of equal importance to girls even though they are not the same projects. Many of these in this second year have been repeated. The floors have been refinished and the linoleum has been refinished. Additional table linen, bed linen, luncheon sets, cushions, and towels have been made for the apartment. Some projects which did not need to be repeated in the practice apartment have been carried out in the teachers' lunch rooms and rest rooms, the nurses' room and the reception rooms, such as planning, selecting and making of hangings and curtains. Pieces of furniture from other rooms have been renewed and revarnished. New projects have been added such as laundering of curtains, bed linen and luncheon sets. More meal service has been introduced and in some instances luncheons have been regularly served in the practice apartments to groups of teachers who have made reservations for luncheon. All food work in the practice apartment is, of course, done on the "meal basis." The managerial problems involved are given particular attention.

The girls in the seventh grades and in the low eighth grades have courses in both food and clothing before they take the course in home problems which has been described. Their work in food courses is related in every way to health problems and health habits. Nutrition problems are thoroughly instilled in the hope that girls will use the knowledge in the daily selection of their own food. No opportunity is lost in the clothing classes to show the relation of clothing and health. Health problems are not limited to food and clothing courses. There are innumerable health problems very closely related to ventilation, sunlight, sanitary plumbing, bathing facilities, variations in temperature from heating systems, proper lighting and many others of similar nature. Health problems are considered most important and are emphasized in order to carry out the idea that one of the big "jobs" of home economics is health education.

A Coordination of Industry and Education—II

Based on an Interview with Robert W. Balderston

Secretary of the Philadelphia Inter-State Dairy Council

Editor's Note—The first article on this subject appeared in the April issue, the interest being so general that we determined this month to submit further details of the Council's dramatic program, as well as to show the close relationship existing between the work of local councils and the National Dairy Council. Among the specialists in nutrition work who have helped to carry out the work are Louise E. Northrup, Myrtle L. Barger, Edith M. Howes and Del Rose Macan.

THE Philadelphia program is an example of the type of educational work which the National Dairy Council of Chicago is carrying out in various other cities, such as Pittsburgh, St. Louis, Columbus, Minneapolis, and St. Paul, based on the eight health rules standardized by the American Child Health Organization.

Besides a country department, the object of which is to improve the quality of milk shipped into the city, the two chief branches of the Council are the dramatic department and the nutrition department. These are in direct cooperation with the public schools of the city.

The most important contribution of the councils in their work has been the development of new methods of teaching health and at the same time the supplying of trained specialists who are able to carry out these methods for the schools.

These serve to supplement the regular health teaching carried out by visual methods, so that abstract features in health, such as fresh air, sunshine and good food are presented as elves and fairies, which are concrete

An "all-American" play by pupils in a Philadelphia school and become actualities in the child's life.

An outstanding activity of the Philadelphia Council in cooperation with the schools has been the staging of plays as part of the school program. These are suited to the various ages for primary, grammar and high school groups. The entire burden of the training and production is taken off the teacher and assumed by the council workers, who train the children in four rehearsals. Costumes are furnished also, so that the teachers are entirely relieved of responsibility.

The "Milk Fairies" play tells the story of little undernourished Johnny who becomes convinced of the vital need of milk in his diet because Vitamine, Mineral Matter and other fairies who live in the milk bottle tell him how strong and healthy milk will make him. This play is particularly suited to children from the first to the eighth grades in schools where there is a stage. "Four Short Plays" have been prepared for production by children of the same age, in the school room. They include "How Milk Is Made," "Following the Milk Can," "Eating Milk," and "Milk for the Whole World." For older groups, seventh, eighth and junior high school grades, the play shown in the illustration on preceding page is used. The health astronomer with his magic telescope shows the healthy people of foreign lands to Martha and Jean, telling how the good food habits of these people aided in fostering the national health. Columbia welcomes each nation with its contribution of health to the national welfare.

For high schools "The Garden of Hours" is used. In pantomime and verse Father Time reveals to pale Mary and rosy Gladys the Hours of the Day and their secrets of health. The pantomime of various health habits and their attendant results of happiness and better scholarship are shown in symbolic dances.

Dairy council workers often speak at health centers, nutrition and open-air classes where they give health talks and stories for mothers and children. Frequently a worker gives a demonstration and mothers learn how to prepare nutritious soups and desserts. In some schools the Home Economics Department cooperates in preparing the foods.

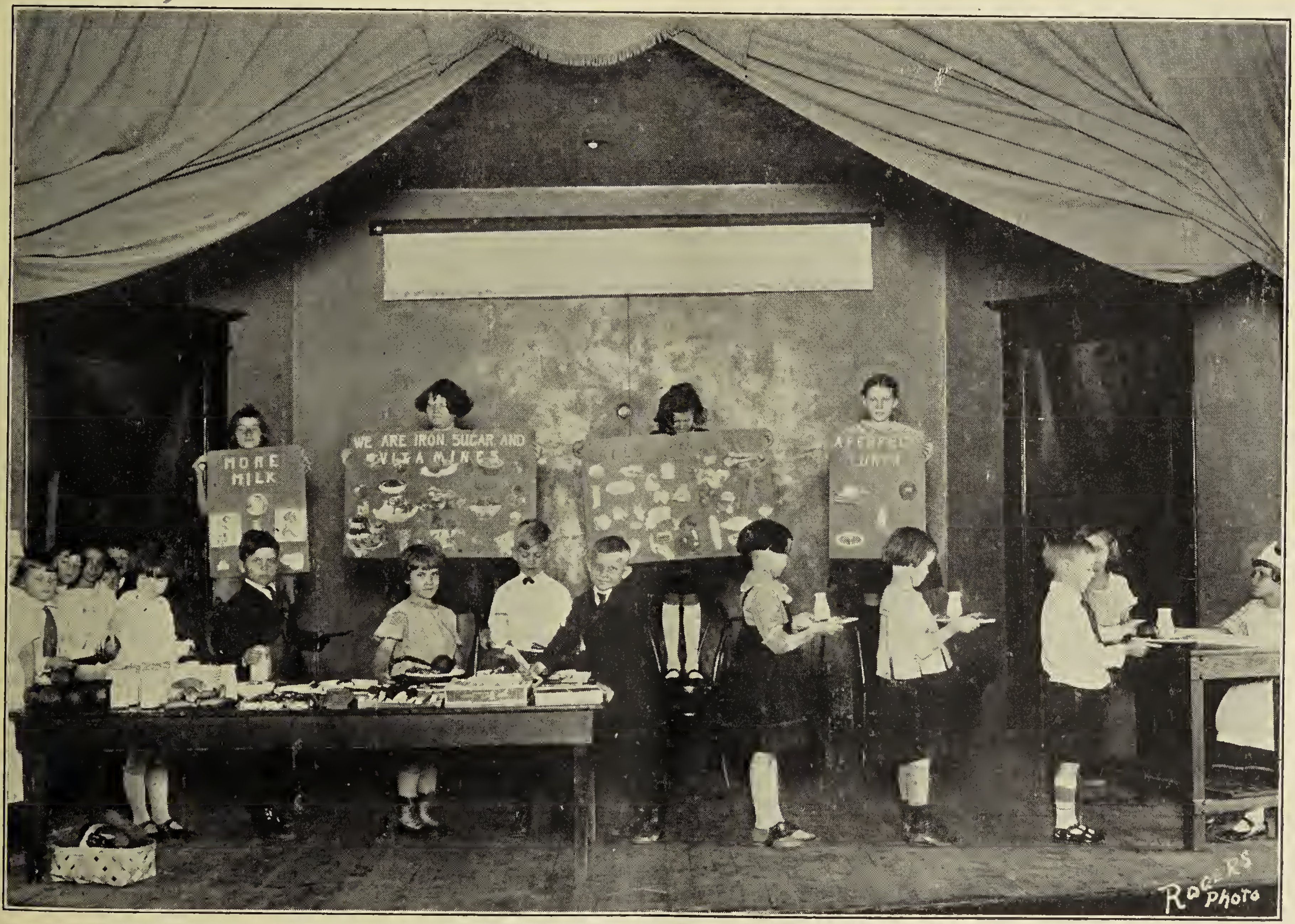
Selecting a Well-Balanced School Lunch

By BEULAH J. ERWIN

Teacher in Rusk School, Dallas

THE first law of the Children's Good American Code is, "A Good American Is Well." One of the first rules of health is to eat the right kind of food, at the right time, in the right way. There are various ways of impressing this fact upon children, but one of the most successful is found in dramatization. This can be done in correlation with number by means of attractive lunch posters with the prices of the food attached, or in the free dramatization work at the language period or story hour.

The following is an original dramatization of "Our Own Lunch Room," given by the first grade pupils of Rusk School at a meeting of the Parent-Teachers' Association. The scene of the play represents the Rusk School lunch room.



Scene from "Our Own Lunch Room" in the Rusk School, Dallas. The posters were made by fourth grade children

Principal characters: Mrs. Baskett, principal of Rusk School; Miss Brown, teacher of domestic science; Mrs. Marshall, school cook; Jimsy, a new pupil.

Mrs. Baskett, observing watch—It's about time for the lunch bell.

Miss Brown, as bell sounds—There's the bell now! Is everything ready, Mrs. Marshall?

Mrs. Marshall—Yes, I think so.

Mrs. Baskett—Here come the first grade children.

(Children file in, in an orderly manner, choosing their lunches. A sudden disturbance as Jimsy enters.)

Jimsy—Oh, boy! I'm going to buy my lunch today!

Mrs. Baskett—Little boy, have you never been in this lunch room before?

Jimsy, hesitatingly — No'm. Just started today.

Mrs. Baskett—Well, look around you and see how nice and quiet the other children are.

(Children file past Miss Brown paying for their carefully selected lunches, which she does not fail to observe and comment on.)

Jimsy, bursting forth again—Ain't you got no hot dogs?

Mrs. Baskett—No, indeed, little boy! What is your name?

Jimsy—Jimsy.

Mrs. Baskett—Jimsy, you should say, "Have you any sandwiches?" (Jimsy repeats.)

Miss Brown—We have some nice ham sandwiches over there, but we never sell "hot dog" sandwiches.

Jimsy—I'm tired of old ham. Been raised up on it.

Miss Brown—Try one of our nice plate lunches.

Jimsy—Plate lunch? What's that?

Miss Brown—Please give Jimsy a plate lunch, Mrs. Marshall?

Jimsy—Man! What's all this? Veal loaf and green beans and sliced tomato. Oh, boy! this looks good to me!

Miss Brown—Take some whole wheat bread or a piece of cornbread, whichever you want.

Mrs. Baskett—Jimsy, you didn't get any milk.

Jimsy— Oh, goodness! I'm tired of milk, too. Ain't you got no—er—a—have you any coffee?

All surprised—Coffee? Certainly not!

Jimsy—I'll take a red soda pop then.

Miss Brown—We don't sell soda pop either, because we know it isn't best for little boys. Try a cup of hot cocoa if you don't want any milk.

Jimsy—Cocoa? What's cocoa? Sounds like it's kin to coco cola to me.

Miss Brown—Mrs. Marshall, give Jimsy a cup of cocoa.

Mrs. Marshall—See, Jimsy, it's like hot chocolate. You like hot chocolate, I am sure.

Jimsy—I say I do! But I ain't got enough money to buy hot chocolate.

Mrs. Baskett—You haven't enough money, Jimsy. (He repeats it correctly.)

Mrs. Baskett—Why, let's see, yes, you have. It's only five cents a cup.

Jimsy (to Mrs. Marshall)—Did you make this stuff, really?

Mrs. Marshall—That hot chocolate? Why, yes, we serve it quite often on cold days.

Jimsy—And I all time been thinking you had to buy hot chocolate at a drug store.

(As last of children pass out)

Jimsy, passing by the candy counter —Where's your lickerish?

Miss Brown—Licorice? Why, Jimsy, you'll never find any licorice among my nice candies!

Jimsy—Give me some all-day suckers, or some jaw breakers, then.

Miss Brown—We never sell such candy as that. There is some good milk chocolate candy, but you don't need it with your cocoa. Take a baked apple with whipped cream, or a nice custard.

Jimsy—Custard? I don't see no—I don't see any pie.

Miss Brown—Some custards are made into pies, Jimsy, but this is a nice boiled custard with whipped cream.

Jimsy—Whoopee! look at that cherry on top! How much is all this junk?

All, astonished—Junk? Why, Jimsy, that's a nice lunch, a lovely lunch!

Jimsy—I mean all this good stuff.

Miss Brown—That good lunch is only fifteen cents.

Jimsy—Fifteen cents! Only fifteen cents? Goody, goody! I know my mother'll let me buy my lunch every day when I tell her about all these good things.

Miss Brown—Well, I certainly hope you have learned how to buy one!

Mrs. Baskett—I'm going to watch you tomorrow, Jimsy, to see if you have learned to select a good lunch.

In conclusion, I wish to state that these first grade children show better judgment than a great many grown-ups when it comes to choosing a well-balanced lunch. Children who were underweight are gaining rapidly toward their goal of normal weight. This fact is very noticeable in several instances by a marked improvement in their school work.

Home Economics in Los Angeles

By ETTA P. FLAGG

Supervisor of Home Economics, Los Angeles City Schools

FROM the littlest child to the sturdiest of "the fellows" each and every group helps us to emphasize the "human interest" of our work. Begin with the youngest section. Go into any of our day nurseries, see the welcoming arms and the bewitching smiles of these babies and feel the response in your own heart.

Go from here to a class in B5 sewing. What are they making? It will mean nothing to you but ask some child and see her face light up as she answers, "A bib for my baby brother." Before Christmas thousands of these pretty, decorated bibs were carefully made for Christmas gifts. What does that mean in teaching thoughtfulness for others? Come into an older class in sewing. All the girls are working on little children's clothing. For their own little brothers and sisters? Oh, no; for one of the day nurseries where we need more garments. Step into this eighth-grade class and see these girls just ready to graduate. Notice the simple, artistic, becoming dresses they wear. Did they buy them at our best department store? By no means. They made them in class.

Step from here into the cooking class. The lesson is on picnic lunches. What are the pupils doing? Notice the boxes carefully packed and just ready to wrap. A full picnic lunch has been prepared and now they will all go to a near-by park to enjoy a real picnic while eating their lunch. Are you hungry for a picnic lunch? Hasten to this next school and I shall invite you to join the teachers in their well-served lunch. Do you prefer a cafeteria? If you are very expeditious you may reach an elementary school where the children are serving hot soup, delicious scalloped dishes, fruit salads, hot gingerbread and simple puddings.

But you say that they ought to know something about food values. Have you more time that you can spare? Listen to this discussion. Notice how the teacher approaches the subject "balanced foods"—sufficient of each kind to cause the scales to remain "balanced," foods to be combined according to their reaction in the body. Surely this has a "human touch" to it.

Now come again and look into two more rooms. You are especially interested in boys? These sixth-grade boys are just coming into class. Ask them what the "aims" are in their course: "Camp cookery, home cookery, fundamentals of nutrition, worthy home membership." And today? Steamed fruit dumplings. I know you would like to stay and sample them yourself, but you must come to this other room and see the coverlet being woven for the "hope chest." Full size it will be, blue and white, the pattern copied from an old colonial quilt and the work all done by hand. Do you see how this will prove the key note for the room?

Food Work in Dallas Elementary Schools

By MAY GLEASON
Director of Home Economics, Dallas Public Schools

Home economics class in the Fannin School, Dallas

THE foods courses in the elementary schools of Dallas are planned to give students the essentials of selection, preparation, and care of foods, with regard to nutrition and economy. To give points and interest to this work, it is centered around the day's diet. Each meal is based on the requirements of a school child.

Elementary schools have seven grades, and the time given home economics in each semester of the sixth and seventh year averages five class periods a week, divided equally between foods and clothing. This division gives us nine consecutive weeks in each semester for foods. The sixth grade work gives special attention to breakfasts and luncheons, planning meals in which a school child's requirements are adequately met, suggesting the best selection of foods in the lunch room and also how to supplement the lunch brought from home. The seventh grades take up the planning and preparation of dinners, and the best use of leftovers for luncheons or suppers. Some time is given to working out meal costs, with prices at local markets as the basis of food costs. The actual cooking and serving of meals gives practice in balancing meals, cooking in family quantities, serving, table etiquette, planning of work, and estimating food costs.

It seems unfair to exclude school boys from all training in foods and to overcome this the home economics teacher has been given the physiology class. She is able in this way to relate these two subjects, and finds quite as much interest and improvement in food selection among the boys as among the girls.

Many of the school lunch rooms are directed by home economics teachers. They have a great opportunity to make wholesome school lunches come true, and have used it wisely. The most far-reaching influence of our department is in the feeding of school children.

Results in home economics are obtained in various ways: through interest in the welfare of a younger brother or sister, or of an invalid in the family, or in improving muscle, weight, or complexion. One sallow little girl resolved to abandon her breakfast of candy and eat cereal with milk, and fruit. Many are led to improve eating habits by the class weights, which are taken by the teacher at the beginning of each semester.

While food and nutrition are taught as such mainly in home economics classes, our department receives wholehearted support from practically every department in school. Physical education and playground teachers stress selection of proper food, auditorium teachers put on nutrition programs, kindergarten and primary teachers cooperate in helping the little boys and girls to know what foods to choose both at home and at school. The most hopeful feature of the nutrition side of our school work, however, is an ever increasing demand on the part of mothers for further enlightenment on the subject of food and nutrition.

Food Selection Lessons in Dallas School Lunch Rooms

By VIVA COX
Teacher in City Park School, Dallas

CHILDREN may gain valuable information in the selection of foods from the school lunch room. Only a small part of the lunch room problem has been solved when well prepared foods are displayed for a child's approval. It is an easy matter for children to get assistance in the choosing

The home economics instructor teaches food selection to boys in this physiology class in the Lipscomb School, Dallas

of correct verbs and pronouns, but they often stumble blindly through the ordeal of selecting a lunch and nobody stands ready to lend a helping hand. Is it because we do not believe the question of food plays an important part in a child's day? Or do we expect him instinctively to select a combination of foods that are best for him? It seems rather to be a matter of indifference.

Perhaps we allow them to continue buying mistakes and often ill health because we think they are too small to know anything about the foods they eat. They may buy all sweets and they may never select milk, fruits or vegetables; but they struggle along somehow until they reach the fifth or sixth grades, where the girls begin a course in home economics. Early habits are most lasting, and, by the time children have reached the fifth and sixth grades, they have formed very fixed ideas about what they can and cannot eat.

It is a matter of great interest to know the enthusiasm that may be created among the smallest children in regard to food. Compare them in size with the babies at home; point out the part food has played in their journey away from the baby stage; then compare them in size with their fathers and mothers, never forgetting the importance of foods in their growth. You immediately have their interest and confidence in the question of eating. When they once learn that you are interested in what they eat, they will never pass you in the lunch line without proudly displaying their trays, or offering excuses if they feel they have made poor selections.

As a teacher of elementary home economics in the Dallas schools, I have charge of the lunch room in a school of seven hundred children. It is my duty to plan the lunches, order the foods, and see that the cooks prepare and serve the food as planned. I meet the girls of the sixth and seventh grades for their work in home economics. In a school of this size the girls of the two grades mentioned represent a small per cent of the pupils in attendance. It would be a sad condition if this group of seventy-five or eighty girls were the only children in school who received any instruction in the problem of food selection.

When the platoon system was installed in the Dallas schools, it gave a wonderful opportunity of coming in contact with all pupils in their auditorium work. Early in the fall of the present school year, the auditorium teacher and I set aside a week for the study of foods as found in the lunchroom. The children were alive to their finger tips and interest ran high. Whenever I could take a few minutes from my regular work, I met with the children in the auditorium and we talked foods.

As a climax to the week's work, the children of the first five grades were assembled for a food pageant on Friday. Each grade had been given some part on the program. Some of the numbers were in rhyme, others in prose, but all were brief and to the point. One child represented a school plate lunch, and told of some of the varieties here offered daily. Milk, soup, vegetables, fruit, salad, and dessert were all represented. Following these numbers, a group of prospective "buyers" appeared for lunch. These were divided into wise and foolish buyers with different amounts of money to spend in the lunch room.

Open graves had been prepared—where the children buried some of their old favorites in foods. These foods were taken from those which they had repeatedly called for in the lunch room, but which were undesirable as food for children.

As a grand finale to the program Milk was crowned as "King of Foods," and a chorus marched in, singing praises to King Milk.

The effects of this little program have been far-reaching. Since then it has been repeated a number of times, but the results that interested me most were those felt in the lunch room itself. The popularity of milk, fruits and vegetables increased beyond my fondest hopes. Several months have elapsed since the food week was observed, but our school still leads in the sale of milk. The satisfaction gained from seeing children select such foods as spinach, carrots, lettuce, prunes and baked apples, for their noon day lunch has more than repaid for any extra time that may have been spent in planning for that one week's work.

Poster Talks for 8-B Girls

By SUSAN M. CAGWIN

Teacher of Cookery, Brooklyn, New York

TO help spread a knowledge of food facts and health rules to girls and boys of the lower grades the following plan was tried in a Brooklyn school. All of the cooking classes made posters, each class choosing the topic it wished. From these the best were selected until there were several sets of ten or twelve each. One set illustrated milk, another vegetables, another cereals and others such subjects as the value of exercise, fresh air, and sleep. All of the 8-B girls wrote two- or three-minute talks on these different subjects, writing one a week as outside homework. These were handed in and the girls who had the best ones each time were asked to prepare them to give before the lower classes.

On Monday morning the 7-B class that came at that time put a set of the posters up in several of the different classrooms, the milk posters in one room, the sleep posters in another and so on. These were left for one week, and changed each Monday morning to different rooms.

Each week, when the 8-B girls came one of them who had prepared her talk on milk went to the room where the milk posters were and gave it. One who was ready with her vegetable talk gave it before the pupils in that room, and so on until all the subjects were completed. The next week other girls who were prepared made the talks.

It took practically the whole term to carry out this plan but every girl in the cooking classes had a part in it. Every 8-B girl had an opportunity to summarize what she had learned, even though she may not have been chosen to give a talk. The children in the lower grades were much interested in the posters and listened attentively while the 8-B girl in her white cap and apron talked to them.

One-Hundred Calorie Portion Cards

By HELENA M. BEAM

Daniel Webster School, San Francisco

THE girls of the eighth grade saved colored pictures of foods cut from the advertisements in magazines, and when we had a good collection we spent an afternoon making cards representing one-hundrded-calorie portions of food. For instance, consulting "Feeding the Family," by Rose, or the United States Government Bulletin on "The Composition of Foods," we found that four soda crackers yield 100 calories. So, from our pictures we cut four crackers and pasted them on a card—then two tomatoes, twelve walnuts, and so on, until we had foods representing all groups.

This gave the girls a very concrete idea of food values and some very interesting games were devised. The cards were displayed on the chalk trays around the room and a girl would be sent to select a breakfast which would yield six hundred calories. Another would be sent to select a food which could be substituted for one selected by the first.

Other luncheons were studied until we felt that the girls could very wisely select a cafeteria meal or plan a home meal.

Health Poems

Written by Children in the Baltimore Public Schools

The Vitamine's the Thing

By ELIZABETH CORNELIUS

Class 9A, School No. 47

The vitamine's a bashful thing,
We've never seen his face,
But they say he's vital to the health,
Of the whole human race.

The scientists discovered him
Just a short while ago—
And ever since they've found him out
Wherever he could go.

They analyzed a cabbage plant
They found the vitamine,
And now they say he's to be found
In everything that's green.

They looked in butter, milk and cheese
The vitamine was there.
And so they say, "Drink lots of milk,
If your health needs repair."

As if all this were not enough,
They still gave him no peace,
They went and tracked him to his lair
In—would you think it—yeast!

So now, you know, it's quite the thing
To count your vitamines,
They're even more important still
Than calories it seems.

Poor, shy, retiring vitamine,
So in the public eye,
They've found every retreat to which
The bashful thing could fly.

The Care of Food

By GERTRUDE KLEIN

7A1, School No. 40

The care of food is an important fact,
It takes only a moment, and is a needful act.
It is safer to keep cereals in a covered jar
Than in bags or pasteboard boxes, by far.
In a covered utensil should be kept the fish,
To keep from affecting the other dish.
In a cool, clean place cream should be kept,
While in cool, dry places cheese should be left.
Food should be cared for again I must say
Unless to the doctor a visit we pay.

Sleep

By SOPHIA MORRIS

7A1, School No. 40

Sleep is a thing which is needed by all,
Especially by children who want to be tall,
Sleep will not harm you even by day,
'Tis the best thing for children who jump and play.

Sleep for the elders is very good, too,
For they need the sleep as well as you do,
A good nap in the day will not harm them any
They will feel cheerful—unusual of many.

The quantity of sleep we put to the test,
For children ten hours is a sufficient rest;
And if they do not get ten hours of sleep
They'll be naughty and into everything peep.

Milk

By GERTRUDE KLEIN

7A1, School No. 40

Milk is a substance good for all,
The smallest, the small, the tallest, the tall,
A quart of milk is sufficient a day,
For children who romp, jump, frolic and play.

And as for a grown-up, it's good too,
Milk very seldom harm does do,
A pint of milk is sufficient for those
Who work and move both fingers and toes.

So there you see, little girls and boys,
That in every drop you find some joys,
Even for baby, a wee, wee, lad,
It keeps him healthy, as well as glad.

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Mouth Hygiene
FOR
School Children
BY
Alfred S. Fones, D. D. S.

Director of the Division of Dental Hygiene, Board of Education, Bridgeport, Connecticut.

This book discusses the diet essentials in the building of firm, dense teeth. Dr. Fones believes that dental caries may be prevented by proper attention to the diet, and that school children may be taught to like foods that will make strong teeth and healthy bodies. He urges that children be taught to eat such natural sweets as figs, dates and raisins, real molasses, honey and pure maple syrup.

The most carefully selected food, however, will harm the teeth if allowed to remain on their surfaces. Dr. Fones tells how children may be taught to care for their teeth, and gives directions for a toothbrush drill for school classes. His booklet contains other material of great value to dietitians and home economics workers.

Handbook Series
Price twenty-five cents

Lakeside Publishing Co.
37 WEST 39TH STREET
NEW YORK CITY

Mother Hubbard's Birthday Party

A Three-Act Play Teaching Nutrition Lessons Which May Be Staged and Presented by Children

By MABEL M. ROSE
Teacher in New York City Schools

CAST

Mother Hubbard
Fido the dog
Curlylocks
Tommy Tucker
Little Bo-Peep
The Pretty Maid
Little Jack Horner
Mary Mary Quite Contrary
Jack and Jill
Miss Muffet
Humpty Dumpty
Tom Tom the Piper's Son
Little Red Riding Hood
Jack Spratt
The Goups
Sleepy-Head
Wee Willie Winkie
The Sandman
The Bad Dream Fairies
The Good Dream Fairies

The play takes place in Mother Hubbard's dining room.

ACT 1

(Gay curtains at window; two doors opposite each other—"a" and "b"; chairs; cupboard with doors, upper and lower part; table in center of room; rocking chair for Mother Hubbard; mantel, or extra table, with flowers; candlesticks; fireplace if possible; blue china on mantel and in lower part of cupboard; Mother Hubbard discovered sitting in rocking chair knitting, dog at her feet. She is dressed in full flowered dress with mob cap, white wig, spectacles, cane resting on chair near her.)

Mother Hubbard: Poor Fido, are you hungry? (Pats him) Perhaps I can find a bone for you. (Rises stiffly from chair, hobbles with cane across room, opens upper cupboard door and reveals empty cupboard; shakes her head sadly) The cupboard is bare, Fido, no bone for you. No supper for me. Poor little dog, you haven't had any exercise today. (Opens door "a") Go out for a little run. (Fido trots out or is carried by Mother Hubbard and put out) Mother Hubbard sits in her chair knitting. (Tap, tap, at the door, repeated twice)

Mother Hubbard: Come in. (Curlylocks enters, dressed in summer dress, with long golden hair, carrying basket; she runs lightly over to Mother Hubbard)

Curlylocks: Birthday greetings, dear Mother Hubbard. (Kisses her) Am I the first one to arrive?

Mother Hubbard: Yes, Curlylocks, but what does it mean?

Curlylocks: We are going to give you a birthday party. See what I have brought? (Both go to center table—Curlylocks unpacks basket, announcing each fruit aloud) Oranges, grapefruit, lemons for lemonade, pears and a big pineapple!

Mother Hubbard: (Busily arranging fruit in fruit dish on table) You have brought a splendid food, Curlylocks, dear. Fruit is such a luscious food and gives us vitamines which we must have in our food to be healthy.

Curlylocks: Are vitamines found only in fruits, Mother Hubbard?

Mother Hubbard: Oh, no, in many foods—butter, leafy vegetables, cream, tomatoes, unpolished rice, and many other foods. (A loud knocking is heard on the door "b." A voice without sings)

Tommy Tucker: Please let me in, I am Tommy Tucker. (Curlylocks runs and opens the door. Tommy Tucker enters dressed in sailor suit and cap, carrying covered tray, singing) I have brought nice bread and butter for the birthday party, Mother Hubbard. (He goes over to Mother Hubbard, kneels in front of her, holds up tray. Mother Hubbard takes the tray, pats Tommy Tucker on the head)

Mother Hubbard: Nothing is nicer than good bread and butter. It makes healthy boys and girls. We should eat bread or some cereal food at every meal every day.)(Emphasizing with finger "every meal every day")

Mother Hubbard: Tommy Tucker, please get a plate from the cupboard. (Tommy, singing to himself, runs over to lower cupboard and brings a plate to table. Mother Hubbard and Curlylocks arrange slices of bread and butter on plate. Knock at door and Tommy Tucker runs to open it. Enter little Bo-Peep, dressed in flowered dress, bustle back, carrying shepherd's crook in one hand, toy lamb under other arm, and runs over to Mother Hubbard, making a curtsey)

Bo-Peep: Many Happy Returns of the Day, dear Mother Hubbard.

Mother Hubbard: Thank you Little Bo-Peep.

Tommy Tucker: (Inquisitively hovering near Bo-Peep) What have you brought for the party, Bo-Peep?

Bo-Peep: (Offering lamb to Mother Hubbard) I have brought one of my lambs so we can have meat at the party.

Tommy Tucker: Ho! Ho! (Laughs) What a funny thing to bring! How can we eat a lamb with all its wool on? (Laughs again derisively)

Bo-Peep: (Looks at lamb in her outstretched hand, begins to cry) It is all I could find to bring. (Crying out loud)

Mother Hubbard: (Takes lamb. Draws Bo-Peep into her arms) Never mind, Bo-Peep, I appreciate your kind thought and thank you for bringing me a present. However, meat is not necessary for the growth of healthy children; in fact, they are better with meat only occasionally. So I think it better to send the lamb back to gambol in the pasture. What do you say, Bo-Peep?

Bo-Peep: (With arms around Mother Hubbard, drying her eyes with handkerchief) All right, Mother Hubbard. (Mother Hubbard hands lamb to Curlylocks who runs to door "b" and disappears, returning in a moment to join group around table. Light knock; "a" door opens and Pretty Maid, dressed like milk maid, carrying a covered pail of milk, trips into the room)

Chorus of Children: It's the Pretty Maid.

Pretty Maid: Mother Hubbard, I have brought some milk for the birthday party. (Drops a curtsey and hands pail of milk to Mother Hubbard)

Mother Hubbard: A wonderful gift you have brought, Pretty Maid, the most wonderful food in the world. We can all have a portion of our "four glasses a day" at our party. How wise of you to cover it, Pretty Maid! (Taps cover lightly with finger; children are in group around Mother Hubbard near center table)

Bo-Peep: Why is it wise to cover milk, Mother Hubbard?

Curlylocks: Oh, I know! It is to keep it clean and sweet, isn't it, Mother Hubbard?

Mother Hubbard: You are right, Curlylocks. We need a pitcher and a nice clean napkin for a cover. (Bo-Peep and Curlylocks run to lower cupboard and bring pitcher. Mother Hubbard pours milk into pitcher and covers it with napkin)

(Door "b" opens on a crack. Little Jack Horner, dressed in sailor suit with broad brimmed hat, puts his head into room)

Jack Horner: I am Little Jack Horner. (Enters dancing, carrying a large pie aloft) I have brought a pumpkin pie for the birthday party. (Dances up to Mother Hubbard, gives her the pie, removes his hat, makes a deep bow flourishing his hat with his right arm. Mother Hubbard holds pie with both hands; children gather around her)

Mother Hubbard: We are glad to see you, Little Jack Horner. You love your little playmates, don't you, Little Jack Horner?

Jack Horner: Indeed I do!

Mother Hubbard: If I tell you that pie is bad for children and often makes them sick, would you want them to eat it?

Jack Horner: (Slowly) No.

Mother Hubbard: What shall we do with the pie, then?

Jack Horner: (Puts his hand to his forehead in profound thought; all the other children do the same) Can grown-ups eat pie?

Mother Hubbard: Yes.

Jack Horner: Let's send it to Mr. and Mrs. Pumpkin-eater. (Children clap their hands; all assent) "Yes, fine!" (Mother Hubbard places pie in lower cupboard; children seat themselves in semi-circle on floor. Knock at door "b." Enter Mary Mary Quite Contrary, dressed in flowered dress and wide flowered hat, carrying basket of vegetables)

Children: Here comes Mary Mary Quite Contrary. (Mary runs over to Mother Hubbard, who is seated in arm chair and drops a curtsey)

Mary: Happy Birthday, dear Mother Hubbard.

Curlylocks: Have you brought silver bells or cockle shells? (Children spring up and gather around Mary trying to see in basket)

Mary: I have many other plants in my garden. See I have brought celery, (holds up each vegetable as she names it) nice crisp lettuce, spinach and carrots. (Holds up a bowl containing latter two vegetables cooked) I cooked the crisp spinach and the tender young carrots at home so they would be ready to serve at the party. I hope you will all like my gift. (Wistfully looks around at group of children; hands basket to Mother Hubbard)

Children: Indeed we do, Mary Mary Quite Contrary.

Mother Hubbard: It will be a wonderful addition to our party; all these good vegetables (lifts them out of the basket) contain substances which make rosy cheeks (pinches cheeks of the little Bo-Peep) and red lips which mean healthy boys and girls (taps Jack Horner on his lips lightly; busily arranges vegetables on table, several children helping her. Loud laughter is heard outside door "a." All turn, see door open; enter Jack and Jill dressed alike as nearly as possible in red striped costumes. Jill's hair is flowing, Jack's cap on back of his head; they enter, carrying and swinging a pail of water between them)

Jack and Jill: Many Happy Returns of your Birthday, Mother Hubbard. (Run over to center, each kiss Mother Hubbard)

Mother Hubbard: Thank you, Jack and Jill.

Pretty Maid: (Peeping into pail) What have you brought to the party, Jack and Jill? (Children press around trying to see into pail)

Jack and Jill: A pail of nice fresh water from Sparkling Spring.

Children: (Speaking, one after another, in tones of disgust) Only water. That's no good. Old water! (Jack and Jill droop their heads in contrast to their laughing, happy mood of a few moments before)

Something *can* be done with malnourished children

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Mother Hubbard: Hush! my children. (Turns to group with admonishing finger) You are wrong. Jack and Jill have brought something to the party that we cannot live without. Don't you know that we should each of us drink six glasses of water a day to keep well? And to think that Jack and Jill have carried it all this way from Sparkling Spring for our party. (Pats Jack and Jill on head; takes bucket of water from them. Jack and Jill look up full of smiles) Jack Horner, Bo-Peep, bring a pitcher and some glasses. (Bo-Peep, Tommy Tucker, Curlylocks and others bring pitcher and glasses from lower cupboard, and arrange glasses on center table)

Miss Muffet: (Outside door "a" Miss Muffet speaks in a high shrill voice) I have brought something for the party, too. (Enter Miss Muffet, a small girl dressed in soft long white dress, broad brimmed hat with flowers, carrying two jars, one of curd and one of whey)

Children: It's dear little Miss Muffet! (All the children run forward and escort her to center table, calling her "dear," petting her and showing great devotion)

Miss Muffet: A heartful of good wishes for your birthday party, Mother Hubbard. Here is my offering to the party. (Hands the two jars to Mother Hubbard, then with outspread skirts makes a deep bow.)

Mother Hubbard: (Examining jars) What have you brought, dear child?

Miss Muffet (Tapping one jar) This is cream cheese made from the soft white curd and this is the whey that was left.

Mother Hubbard: Oh, what a lovely offering you have brought, little Miss Muffet. (Puts jars down, turning to children) Curds you know are delicious, especially if made into cheese and I am very fond of the whey, too. They are both so nutritious because they are part of that wonderful food which is— (pauses and looks questioningly at children, who shout all together)

Children: Milk! (Mother Hubbard nods her head in assent and places jars on table. Outside are sounds of bing-bang repeatedly at door "b." Door opens; enter Humpty Dumpty dressed to represent an egg all in white—tall rounding white headdress coming down to his ears, only his face showing; turns somersaults as he enters)

Jack Horner: It's Humpty Dumpty. (Children laugh and clap their hands to show their delight at Humpty Dumpty)

Humpty Dumpty: (Standing erect before Mother Hubbard salutes like a soldier) My birthday wish for you, Mother Hubbard, is that you will live long and prosper. (Stands at attention like a soldier)

Mother Hubbard: (Saluting in return and at attention) Thank you, Captain Humpty Dumpty. (All laugh, Mother Hubbard and Humpty Dumpty resume relaxed positions)

Tommy Tucker (In tones of disappointment) He hasn't brought anything for the party.

Humpty Dumpty: Yes, I have. (Runs to door "b," reaches out, brings in a basket of eggs, goes over and puts them on table fondly) There, see what I have brought!

Mother Hubbard: Some nice, country, fresh-laid eggs. (Picks up one) A fine contribution to our party, Humpty Dumpty. Eggs are good food for children. They held to build them into healthy boys and girls. We shall make a nice omelet with them a little later.

Miss Muffet: (Boastingly) I eat an egg three times a week for my breakfast.

Mother Hubbard: Good for you, Miss Muffet.

Children: (One after the other) So do I, so do I. (Door "a" bangs open; enter Tom Tom the Piper's Son, dressed in long, light blue trousers, pink shirt, gay cap on back of head, carrying toy pig under his arm; runs in breathlessly)

Tom Tom the Piper's Son: Am I too late for the party, Mother Hubbard? (Speaks in gasps all out of breath)

Children: Tom Tom the Piper's Son!

Mother Hubbard: No, you are in good time for the party, Tom.

Tom: I have brought a nice roast pig for the party. (Hands pig to Mother Hubbard who takes it in both hands)

Mother Hubbard: (In a thoughtful voice) Did you raise this pig yourself, Tom? (Tom hangs his head in shame)

Jack Horner: He stole it, I saw him do it.

Mother Hubbard: Hush, Jack Horner. It isn't fair to tell tales.

Tom: (Beginning to cry) It's true, Mother Hubbard, I d-d-did s-steal it. (Stutters in his anguish) I w-wanted to b-bring something to the party.

Mother Hubbard: (Laying her hand on Tom's head) I understand, Tom dear, but you know you shouldn't take anything that doesn't belong to you, don't you, Tom? (Tom nods, still crying softly) What are you going to do about it, Tom?

Tom: I will take it back.

Mother Hubbard: Good boy Tom. (Gives the pig to him) Run along quickly and you will be back in time for the party (Tom runs out door "a")

Mother Hubbard: We won't miss the roast pig at our party because pork is very indigestible and not good for children (looking at children) Has every one come now, Curlylocks?"

Curlylocks: Not every one. (Door "a" opens; in rushes Little Red Riding Hood) There comes Little Red Riding Hood. (Red Riding Hood, dressed in a red cape and hood, carrying a basket, enters and runs to table)

Red Riding Hood: I have run all the way through the woods. I wish you a very Happy Birthday, dear Mother Hubbard. (Kisses Mother Hubbard) I have brought a nice pat of butter and some cream for the party.

Mother Hubbard: Splendid, we needed some cream and butter to make our party complete. Some fat at every meal is necessary for good healthy people. (Unpacks basket, children watching her)

(Enter Jack Spratt door "a." A very thin boy dressed in long striped trousers, striped shirt, high hat, carrying bunch of flowers. He crawls in on hands and knees)

Jill: Here is Jack Spratt. (All turn)

Humpty Dumpty: Why are you crawling instead of walking?

Jack Spratt (rising slowly): I am so tired. I couldn't walk any farther. Here are some flowers from my wife's garden, Mother Hubbard. She is sorry she couldn't come to the party. (Hands flowers to Mother Hubbard, then leans up against table as if exhausted)

Mother Hubbard: Thank you for the flowers, Jack Spratt. We too are sorry your wife couldn't come to the party. Jack Horner, bring a chair for Jack Spratt. (Jack Horner brings the chair near the table. Jack Spratt sits back with legs out, arms hanging, showing weakness)

Mother Hubbard: Unless you eat some fat you will continue to be thin and tired out.

Jack Spratt: Will I really grow strong if I eat some fat? (Straightening up in chair eagerly)

Mother Hubbard: If you eat the right kind every day at every meal.

Jack Spratt: I will begin tomorrow.

Mother Hubbard: You can begin this very day at our party. We have nice butter and cream. (Touching food. Jack Spratt joins group at table)

Jack Spratt: All right, Mother Hubbard, I'll begin today. (Enter Tom Tom the Piper's Son through window)

Mother Hubbard: You are just in time, Tom. We are now going to have the party.

Curlylocks: (Runs to mantel, brings tall candlesticks with candles and places on table) Here is Miss Nancy-Etticoat, I nearly forgot her. (All laugh. Children begin fixing food, some pour out milk, some fix vegetables and fruit, some arrange chairs; all are busy. Sound at door "b" of children pushing, fighting: "Get out of my way. Stop pushing. You kicked me. I didn't. Let me in first." Children stop work, listening. Door opens; enter the Goups—six children, three boys and three girls—pushing, fighting, dressed in fancy, but torn, costumes, buttons off, hair untidy, stockings half off, with big holes in stockings and clothing)

Mary Quite Contrary: The Goups!

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½ cup sugar   Lady Fingers

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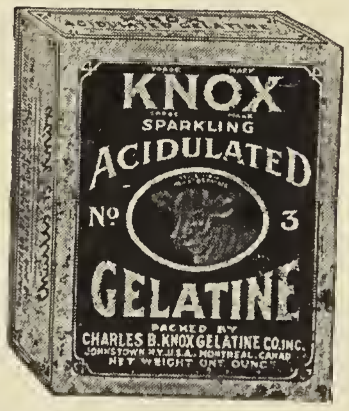
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(Children make faces of disgust. Goups rush to table, look over food, taste it with fingers; one uses table knife. They make faces of disgust, all the time pushing and fighting, while the other children stand aside looking on with disgust. Mother Hubbard at one end of table looks on sorrowfully)

Curlylocks: (To other children) We didn't invite the Goups.

Bo-Peep: They have such awful manners.

Tommy Tucker: (In tones of horror) They eat with their knives.

Little Red Riding Hood: And they lead such disgusting lives. I wish they hadn't come.

Mother Hubbard: (Comes forward and speaks to Goups) Won't you stay for my birthday party?

(Goups toss their heads scornfully)

Goup 1: Is this the food for the party?

Mother Hubbard: Yes. These dear children (pointing to the children) brought it to me.

Goup 2: (Scornfully) We don't like this kind of food. We like pickles and pie.

Goup 3: And rich cake and coffee.

Goup 4: And fried doughnuts.

Goup 5: (To other Goups) Let's go to the pastry shop and have our party.

Other Goups: Yes, let's go. (Goups start toward door in rush)

Mother Hubbard: Wait, children. (Goups pause and turn to Mother Hubbard) If you won't stay now for the birthday party will you come back for the games later?

Goups: Oh yes, we will come back. (Exit fighting and pushing)

Mother Hubbard: (Shaking head sadly) Poor little Goups.

Jack Horner: Why do you say "poor little Goups?"

Mother Hubbard: Because they have been so badly brought up. They are spoiled children. They eat the wrong kind of food and lead restless, unhappy lives. (In changed tone of voice) Let's begin the party now. (Stands near table. Children join hands, forming a circle, and dance around Mother Hubbard, singing to piano "Jingle Bells," or any other appropriate song).

CURTAIN

End of Act I

ACT II

Scene: Same room as Act I. (Table in center with empty dishes and glasses, showing party is over. Children on floor grouped around Mother Hubbard, who is seated in rocking chair relating story; candle partly burned, the children in rapt attention)

Mother Hubbard: And so they lived happily ever after. (Children applaud lightly)

Pretty Maid: That was a lovely story. Thank you, Mother Hubbard.

Children: Thank you, thank you.

Mother Hubbard: What would you like to do next?

Tommy Tucker: Tell us another story, please?

Mother Hubbard: (Shaking her head) No, it's your turn now. (Motions to children) Each one of you must do something to entertain us. Who will begin?

(In turn children entertain by reciting, singing, or dancing in center of stage far enough back to face audience and children. After each number children and Mother Hubbard applaud. Music off stage for some numbers)

Tommy Tucker: I will sing a little song. (Rises, goes to center of stage, bows, sings, to music) What are little boys made of, made of?

Chorus of Children: Spices and snails and puppy dog tails (etc.).

(Bo-Peep and Jack Horner dance a folk dance to music)

Jack and Jill: (Reciting) I saw a ship a-sailing (etc.).

(Humpty Dumpty and Miss Muffet dance a clog dance or minuet.)

Jack Spratt and the Pretty Maid: (Give dialogue) Where are you going, my Pretty Maid (etc.)?

Curlylocks and Mary Quite Contrary: (Sing or recite and execute dance in unison) One, two, buckle my shoe, (right heel, left heel—then stoop in kneeling position as if to buckle shoe)
Three, four, shut the door, (step forward on three, same as four—motion with hand as if shutting door hard)
Five, six, pick up sticks, (on five, right hand down from shoulder, same with left—then bend over as if picking up sticks)
Seven, eight, lay them straight, (on seven and eight beat time with hand—then lay sticks straight on floor)
Nine, ten, a big fat hen, (on nine and ten, arms outstretched, describe circle—then measure height and length of hen)
Eleven, twelve, dig and delve (on eleven and twelve skip to right, then left—then dig as if with spade)
Thirteen, fourteen, maids a courting, (on thirteen, fourteen, rocking step forward and back—then one puts arm around other's waist using imaginary fan to fan partner)
Fifteen, sixteen, maids in the kitchen (on fifteen leap to right, then to left—then one pretends to peel potatoes; the other scrubs out clothes on board)
Seventeen, eighteen, maids awaiting (on seventeen step-hop to right, then to left—then bend forward with an imaginary extended tray)
Nineteen, twenty, my stomach is empty (join hands, turn in a circle on nineteen, twenty—then let go; hands rub stomach)

(Little Red Riding Hood rises ready to sing. Goups enter as before through door "b" pushing, scrambling, fighting)

Mother Hubbard: (Trying to separate Goups) You are almost too late for the entertainment.

Mary Quite Contrary: (To children) Oh, why did these old Goups come back?

Goups: We don't care for any old entertainment. We have had a fine supper.

Goup 1: Oh those lovely pickles and pies!

Goup 2: Oh that rich cake and chocolate candy!

Goup 3: That rich pudding and roast pork!

Goup 4: That strong tea and coffee!

Goup 5: Those fine fried doughnuts!

Goup 6: That rich salad and hot bread!

(Each Goup rubs his stomach and smacks his lips after announcing his menu)

Mother Hubbard: (Shaking her head sadly) Oh, such bad food for boys and girls! Sit down there. (Points to side of stage opposite to where children are sitting. Goups throw themselves on floor.)

Bo-Peep: (Sings to music) "Sleep, Baby Sleep" (as she finishes, door "a" opens; enter Sleepyhead, a small child, yawning, dressed in pajamas with night cap, carrying candle)

Mother Hubbard: It's little Sleepyhead. Come in, dear. (Goes forward; puts her arm around him) We are sorry you are too late for the party.

Sleepyhead: (Between yawns) Birthday greetings, Mother Hubbard. I bring you the gift of sleep for your birthday present. (Yawns again and stretches)

Mother Hubbard: (Patting him on the head) Thank you, Sleepyhead. The gift of sleep is a most precious gift. Sleeping nine hours each night is essential for healthy children. (Sleepyhead sits in the midst of the children, still yawning. Children begin yawning, Goups also. Tapping is heard at window)

(Mother Hubbard pushing curtains aside, discloses Wee Willie Winkie)

Wee Willie Winkie: (His head stuck in through window) Are the children in their beds? It's now ten o'clock. (Disappears. Children and Goups getting more drowsy, yawning, stretching, nodding)

Mother Hubbard: (At window looking out, in an aside) It is snowing. I will keep the children here all night. Their mothers know they are always safe with me. (Seats herself in rocking chair and begins to yawn. Door opens; enter Sandman—boy dressed in tan, with high pointed tan hat, carrying bucket of confetti; tip-toes into room)

Mother Hubbard: (in loud whisper) All right, Sandman, you can begin your work.

(Sandman tip-toes in and out among the children, throwing confetti over them. As he passes the children shut their eyes and gradually sink back on floor and fall asleep. Sandman does the same to Goups, then tip-toes over to Mother Hubbard and throws confetti over her. Exit, on tiptoes. All sleep, lights lowered)

CURTAIN

End of Act II

ACT III

(Mother Hubbard and children fast asleep, lights low, soft music off stage gradually becoming discordant and broken when Bad Dream Fairies enter. The bad dream fairies wear ugly, grotesque masks to make them look like goblins. They enter one at a time all through door "b." All their dancing is in elfish mincing steps)

Pickles: (Enter Bad Dream Fairy Pickle, dressed in bright green, with high pointed green hat, carrying a large dill pickle. She dances in jerky steps over to Goups, in and out among them) I am Pickles, a Bad Dream Fairy. I give indigestion to children. (As each Bad Dream Fairy moves among the Goups, the Goups groan in their sleep, are restless, cry out a little, double up in pain, even sob while sleeping. Pickles stands against the wall near Goups and assumes a pose)

Rich Cake: (Enter the Bad Dream Fairy Rich Cake in brown and white, representing a Chocolate Cake, and carrying a chocolate cake) I am Rich Cake, the Bad Dream Fairy. I make children sick. (After dancing among Goups she stands next to Pickles and assumes pose)

Tea and Coffee: (Enter two Bad Dream Fairies, Tea and Coffee, one dressed in green leaves to represent tea leaves, the other brown with dark brown spots to represent coffee. One carries a tea pot, the other a coffee pot. They wind in and out among Goups in elfish dance) We are Tea and Coffee, the Bad Dream Fairies. We are bad for children. We make them nervous. (Assume poses next to Pickles and Rich Cake)

Hot Bread: (Enter Bad Dream Fairy Hot Bread, dressed in white with brown ribbons to represent crust; carries basket of rolls) I am Hot Bread a Bad Dream Fairy. I hurt children's teeth and often make them sick. (Assumes a pose next to Coffee and Tea)

Doughnuts: (Enter Bad Dream Fairy Doughnuts dressed in striped brown dress, all stripes running round and round, brown hat with no crown on head; she has several doughnuts hanging on her fingers) I am Doughnuts, the Bad Dream Fairy. I represent all the fried food which is so bad for children's stomachs. I spoil their complexions. (Poses next to Hot Bread)

Pie: (Enter Bad Dream Fairy Pie dressed in yellow with ruffles on sleeves, waist of dark brown to represent crust, hat made of ruffles; carries pie aloft in her hand) I am Pie, a Bad Dream Fairy. I spoil the digestions of children. I make them cross. (Assumes position next to Doughnuts. Goups continue moaning and tossing in their sleep)

(Music now changes to happy, tuneful tones in even time. The Good Dream Fairies, who enter next, are dressed in ballet costumess of pink tarletan, barefoot, flowers in flowing hair; two carrying wands with gilded stars and crescents on tips; the other four carry baskets of flowers. They enter through door "a")

Good Fairies: (Enter Good Dream Fairies, dancing in and out among the good children, with light, fancy steps. (They pause) We are the Good Dream Fairies of happy, healthy children. We bring dreams of peace and rest and contentment. (Begin their dance again scattering flowers from their baskets over Mother Hubbard and the sleeping children. The children smile in their sleep, and lie still, showing rest and repost. Good Dream Fairies execute a little dance in center of stage, then kneel in semi-circle, bending over sleeping children as if guarding them, arms raised as if in benediction. The Bad Dream Fairies at same time kneel over the restless Goups and menace them with their clenched fists)

CURTAIN

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Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."**. A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for left-overs and plain desserts. A valuable pamphlet on the use of gelatine.

29. **"Bread and ——."** An illustrated booklet, describing the manufacture of oleomargarine, together with recipes and directions for preparing attractive dishes in which the product may be used.

30. **"One Dish Hot Meals For Rural Schools."** Carefully tested recipes prepared by the domestic science director of a large packing company.

31. **"A Six Weeks' Sequence In School Lunches, Suitable for Schools of 100 to 300 Pupils."** Well organized material on the development of a series of school lunches. Menus and recipes.

32. **"Educational Meat Charts."** Colored charts of convenient size, with a side of beef, lamb, etc., pictured entire, with the different cuts shown graphically, both singly and in relation to the animal.

33. **"Coffee From Tree to Cup."** A series of illustrated cards forming an educational exhibit. Price 50 cents.

34. **"Medal Cook Book."** A carefully prepared cook book, giving directions for all the standard cookery processes with special attention to those dishes requiring flour mixtures.

35. **"Height and Weight Tables For Boys and Girls."** Arranged from Dr. Woods' tables. Cards giving normal weights for both boys and girls. Published by Food and Health Education of The American Food Journal.

MATERIAL PUBLISHED BY GOVERNMENTAL AND EDUCATIONAL ASSOCIATIONS

"Home Economic Study Outline." Prepared by the Home Economics Division, Agricultural Extension Department, Purdue University. A ten-page booklet giving helpful suggestions regarding methods of presenting the subjects of home ecomomics in the class room.

"Good Proportions in the Diet." By Caroline L. Hunt, Office of Home Economics, United States Department of Agriculture. A valuable addition to governmental bulletins, being Farmers' Bulletin No. 1313. Indispensable to the teacher of nutrition.

"Corn and Its Uses as Food:" Farmers' Bulletin No. 1236, United States Department of Agriculture, Washington, D. C.

"List of References on Child Health:" Being the April, 1923, supplement to "Mother and Child." A most helpful summary of recent literature in this field, as published by the official organ of the newly formed American Child Health Association.

What Water is to the Parched Plant—

What the life-giving drops are to the drooping plant, Yeast is to Bread and Bread-dough.

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FOOD TECHNOLOGY

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Disinfection in Food Products Factories

By HARPER F. ZOLLER
Research Department of the Nizer Laboratories Company, Detroit

THERE never was a time when people were as interested in clean foods as they are now, and the public wants food products put out under the best of sanitary conditions." This extract was taken from a recent public address of a well known dairy bacteriologist. Its sentiments, I believe, cover the kernel of desire which prompted the wording of the title of this paper.

While the symposium on insecticides and fungicides here assembled is seriously discussing methods and substances for overcoming the destructive influences of insects and other forms of life among plants and animals, we believe it is worth while and highly desirable to consider very briefly the harmful and destructive ravages of the lower forms of life (micro-organisms) in those factories and plants where food products are handled preparatory to their distribution to the consumer. It is easy to see from observation alone that there is a decided tendency to improve the sanitary conditions around food product factories in general. The study of the conditions which will permit of the safe sterilization of canned goods is now in full swing, and this is one phase of the problem which we can be sure will be largely solved in the near future. But there are other problems which are not yet sufficiently studied. We might mention those plants or factories which produce dried fruits, dried vegetables, and dried meats; pickles and vinegar; cheese and butter; market milk and cream; confections and shelled nuts.

Disinfection is a very broad term. Popular usage would have disinfectants cover insecticides, bactericides, fungicides, fumigants, and, in fact, all substances which destroy or kill parasites and smaller forms of life. Manifestly, this is too general and indefinite. In the present paper the term disinfection is limited to those substances and practices employed to rid food products, and the equipment handling them, of all forms of deleterious and harmful organisms or their products. Obviously, the disinfection of a food products plant initially consists of two essential operations, (1) destruction of rank or unclean odors, and (2) destruction of all micro-organic life which may produce undesirable effects in the operations connected with the processing of the products, in the products themselves, or to the consumers of the products.

Dangers Resulting from Refuse

In all establishments wherever foods or food products are manufactured or handled, accumulations of refuse are bound to result. Leaks, over-flows, dead-ends, sewer logs, form deposits of organic tissue which soon become teeming with vigorous growths of organisms, under proper conditions of temperature and humidity. If the protein content of the refuse material is high, the foulest of odors and gases will emanate therefrom. If the carbohydrate content is large, acid fermentations will ensue, which often work havoc with the metals and cement materials of the factory. Infusive contaminations in the processing equipment may often completely cripple the plant's production. I am sure that we all have experienced the sensation which results from the shifting of the early summer winds as they waft the tell-tale vapors of a gelatine, cheese, meat packing, or similar establishment toward us.

But, you say, why remind us of this common every-day experience? Are these odors not normal to these places of operation? Yes, they may have been normal to them in the past and in the majority of cases they may be normal at present, but they will not be so in the future. It is not normal that gelatin, chedder cheese or pork sausage should stink, or even have a very tell-tale odor. These places can be cleaned of their odor producing emporiums if rightly handled, and at a very slight expense, and at a very great gain in prestige. Most all of the odors result from biochemical changes produced largely by putrefactive micro-organisms. And it is exceedingly easy to destroy the odors of putrefactive products. This has been shown to be the case at certain garbage disposal depots and in sewage wastes, where chlorine or hypochlorites were employed as the deodorants. We may say, therefore, that to the visitor or to the neighbor of the food products plant the chief question of sanitation about these places is the destruction of odors, because it is always hard to disassociate the odor of the plant and the final product. But the chief concern of the factory man himself with disinfection lies in his desire to keep up yield, prevent spoilage and to satisfy the stockholders.

The average foreman in a plant will, if he smells a foul sewer or finds a pile of decaying vegetable matter, immediately run to the caustic soda or lime barrel and then proceed to bombard the offending stench with either one or both, to do a good job. It matters not whether it is concrete, iron or porcelain tile that is in the way. Neither does he worry that he has turned loose an army of volatile amines by his alkaline dash, which may be even worse in intensity than the original stench. If the alkali supply has run out and there happens to be no lime handy, a supply of creosote or pine oils is found, which is hurried to the spot to neutralize the odors caused by the decaying organic matter. And I have found some very well paid chemists directing the foreman so to do.

We can conveniently group the principle disinfectants now in use under the following heads:

(1) Alkalies—Caustic lime, soda and potash, soda ash, borax, alkali, cleansers, etc.
(2) Phenols and Cresols — Creosote, coal tar disinfectants, carbolic acid and mixed cresols, etc.
(3) Pine Oils—Resin oils
(4) Formaldehyde

(5) Hydrocyanic acid, sodium cyanide, etc.
(6) Chloride of lime
(7) Chlorine gas
(8) Sulphurous acid, sulphur dioxide and sulphur
(9) Steam
(10) Metallic salts, e.g., $HgCl_2$, $FeSO_4$, $ZnCl_2$
(11) Hydrogen peroxide and other peroxides
(12) Sodium hypochlorite

There are many others not mentioned above. Of those mentioned only a few are serviceable about food plants. The cresols, pine oils, metallic salts, etc., have no place whatsoever in the disinfection of materials in food factories. Alkalies are valuable only as a cleanser in the sense of a solvent for fats, protein matter, etc., but should not be expected to disinfect to any but a very limited extent. Formaldehyde is valuable under certain conditions because of its application as a gas in confined spaces where moisture is present. It is not good when an abundance of protein matter predominates. It is a poor disinfectant for molds and yeast and certain types of bacteria. While hydrocyanic acid has been used extensively in cereal plants for the destruction of certain insects, its use has not been attended without loss of human life, and is extremely limited. It may, therefore, be said to have no value in the disinfection or sterilization of equipment, sewers, food offal and the like.

Sulphurous acid has found extensive use as a bleach in food product factories; because of its disagreeable odor and metallic attacking properties its use is restricted as an open air disinfectant. Hydrogen peroxide is valuable to a limited extent only, as is, likewise, ozone. The former is rapidly decomposed by catalase. All plant products and many micro-organic by-products contain an abundance of the enzyme catalase, and hence its germicidal value would be much reduced. Its properties as a deodorant in decaying organic matter are mainly lacking.

Steam as a Disinfectant

Steam has been relied on in the past to do the largest share of cleansing and disinfecting in all food products establishments. But the numerous failures in those plants through its use bear evidence that it too has limited employment. There are numerous instances where its use under pressure of ten pounds per square inch has failed to prevent contamination in plants where operations have depended upon the use of pure cultures. It can be said that in the last ten years the number of varied industries depending upon the use of pure culture has increased over a thousandfold. Cheese, alcohol (ethyl, butyl, glycerol, etc.), vinegar, yeast, lactic acid, citric acid, and a host of others have increased their number tremendously until the time is not far distant when we shall have an era of truly fermentation industries. Steam is effective at times in disinfection of equipment in these factories, and there are times when its use is attended with dangerous contaminations which drop the yield of the products below the line of no profits. Two things deter markedly from the value of steam as a suitable sterilizing agent in many plants: (1) the variation in heat capacity between moist, dry and superheated steam and (2) the variation in conductivity of equipment on or in which the steam is being directed.

Sterilizing Equipment

Chlorine gas is being used in many plants to sterilize such equipment as pipe lines, vats, and pumps. Where great quantities of sterile wash water are wanted for certain purposes it is bubbled into the water, and maintains sterility for the duration of the process in question. As pointed out, it is also used extensively in garbage and sewage disposal depots to deodorize and reduce rate of putrefaction. The chief thing against free chlorine is its vigorous action on metals when moist, and the instability of its water solutions. Its bactericidal action is high in the absence of excess organic matter; thus as a sterilizing or disinfecting agent it is applicable only (a) where its wear and tear on equipment is low, (b) its confinement is possible, (c) or very little organic matter is present.

Chloride of lime (calcium hypochlorite) is a valuable disinfectant for use on the floors, walls, sewer openings, and regions where the presence of lime is permissible. It is less valuable in pipe lines and around equipment, because of the high content of suspended lime and the low solubility of the stable products. When chloride of lime is mixed with white wash, it furnishes a most satisfactory disinfectant coating.

For a general disinfectant in food factories there is none which lends itself so completely to employment as sodium hypochlorite. It is my purpose in the remaining portion of this paper to present the important features of sodium hypochlorite disinfection. I should like to have included sterilization, but there are several considerations which have arisen which make it politic to refrain from using the latter term. It is felt in some quarters that unscrupulous manufacturers, or factory men (through ignorance), may be led to misinterpret the meaning of the term "sterilizing agent," and use sodium hypochlorite to preserve food supplies, perhaps including it in raw or partially heated products to aid in prevention of spoilage. This practice would be impossible to a large extent, because the hypochlorite is rapidly absorbed by food products in general, especially if they contain much protein matter, and result in final spoilage of the product. As I have previously reported, sodium hypochlorite will not sterilize a sample of milk even when 0.1 per cent of available chlorine has been added; in such milk the presence of free sodium hypochlorite has been demonstrated by the use of starch-sodium iodide reagent. The actual percentage of bacteria killed in such a milk is between 50 and 80 per cent, as confirmed by the agar plate count (2). Economically, sodium hypochlorite can never be used as a food preservative. It should never be attempted as a food preservative. The food control laboratories and state experiment stations should advise and inform the public to this effect. I deem it very unwise legislation to strike out its use in food products factories as a disinfecting agent. Many reasons why it is becoming so valuable in these plants will be found in the following discussion.

Sodium hypochlorite is very readily prepared in small or large quantities for factory purposes. It may be made either by the electrolysis of sodium chloride or by direct chlorination of buffered alkali. The latter method has been successfully worked out in our laboratory and is being published in full for the information of those interested. It undoubtedly is more satisfactory to make it in this fashion in large quantities than by any other method, and can be regulated to yield more stable solutions. A 5 per cent available chlorine stock solution is made at a maximum cost of about sixteen cents per gallon, and it will remain permanent for a six months' period or longer. Dilutions of any strength can be made from this solution as needed for factory use. Our studies on its disinfecting power, as measured by the phenol coefficient methods, and as determined in regular factory practices, over a two-year period, have revealed especially gratifying results.

As it has been reported before the Society of American Bacteriologists, a stable sodium hypochlorite shows a phenol coefficient of 40. to 300. depending upon the organisms used. It always showed a positive mercuric chloride coefficient of 1.5 to 3.0. The only precautions necessary in the control of its use in the factories consist in diluting a stable form of the hypochlorite to a concentration consistent with the equipment being disinfected (about 0.01 to 0.05 per cent available chlorine) and to maintain a supervision of the final disinfectant wash at the end of the operation to be certain that there is yet free hypochlorite present. This can readily be ascertained with starch-sodium iodide test paper. All equipment and apparatus being disinfected should be washed thoroughly before treatment.

It can then be treated with either warm or cold sodium hypochlorite rinse water and can be completely sterilized within a five minutes' period with a 0.01 per cent available chlorine solution. A solution of 40 deg. C. will kill the same organisms or spores in 25 per cent of the time required for a solution at 20 deg. C. We cannot expect nearly as efficient results from any disinfectant solution available at the present time.

It has been said that chlorine solutions are very active on metals. This is the trouble to be expected from pure chlorine gas dissolved in water or water vapor. But the fact that sodium hypochlorite disinfectant solutions made up from stable stock solutions are always alkaline in reaction (pH 8.5 to 9.5), renders its action on metal much slower. It is less active on copper, brass, bronze, nickel, german silver, monel or lead than it is on aluminum, zinc, tin or iron. The short time necessary for complete sterilization renders its action on metal parts practically negligible. After equipment is treated, the disinfecting solution should be entirely drained from it. When sodium hypochlorite is to be used on concrete floors, sewer traps, walls, refuse dumps, etc., a solution containing 0.1 per cent of available chlorine is recommended.

If traces of sodium hypochlorite should get into food products containing protein material, it is immediately absorbed by it as a chloro protein product, and some sodium chloride is formed at the same time. Ordinary sodium hypochlorite solutions have no injurious effects on the human skin.

Because of the high germicidal activity of its dilute solutions and its rapid destruction by organic matter, it is a very safe and effective disinfectant around food materials.

Metal Force Pumps

There are continual needs to reach areas in factories with a sterilizing or disinfecting solution which cannot be covered with a regular flow of the material. An all copper or brass force pump which works with air pressure serves admirably for this purpose.

In conclusion we may group the advantages of sodium hypochlorite disinfection in food factories as follows:

(1) Its stable solutions possess the highest bacterial efficiency of any disinfectant known.

(2) It is entirely safe to employ where food materials are handled, because of its non-toxic action on the human organism in the concentration necessary to sterilize equipment in factories.

(3) It is readily available to all food factories since they can prepare their own solutions at a very low cost.

(4) For certain purposes it is cheaper than steam, and more effective.

(5) Its solutions can be pumped or handled in regular equipment with very little danger to the equipment through chemical action.

(6) It is useful only as a sterilizing rinse on equipment (not for cleaning), but is valuable additionally in factories as a deodorant on decaying organic matter, and for disinfecting floors and walls.

Summary

(1) The general sanitary conditions in and around food products factories need to receive more attention.

(2) They may be bettered by the elimination of carelessness and through the use of proper disinfection.

(3) Yields in fermentation industries are dependent upon the prevention of contamination. This is regulated only by efficient disinfection and sterilization.

(4) Only a few of the mass of disinfecting agents on the market are suitable for use in a food products plant. Those which may taint the products or those of high toxicity cannot be used. Neither can those be used which seriously attack metal.

(5) Attention is called to the remarkable advantages of sodium hypochlorite, and its use is urged. Its cheapness, high disinfectant action and safety to the human element recommend it as a disinfecting agent. It is of no value as a food preservative, and should not be used as such.

References

(1) B. W. Hammer. "What does a Bacterial Count Tell the Public?" "Ice Cream Trade Journal," 19, 67 (1923).

(2) S. M. Eaton and H. F. Zoller. "V. Sodium Hypochlorite, Some Studies on the Bactericidal Action of Sodium Hypochlorite in Cow's Milk." "Journal of Dairy Science," VI, March, 1923.

Read before the American Chemical Society, New Haven, Connecticut, April 5.

Chemists Discuss Food Products

Preserved Fruits Are Chief Topic Discussed at Agricultural and Food Chemistry Divison Meeting

THE foregoing paper on "Disinfection in Food Products Factories," by Harper F. Zoller, was one of a group read before the Division of Agricultural and Food Chemistry of the American Chemical Society, at the sixty-fifth annual meeting of that association in New Haven, April 2-7. Other papers read before the division were:

"Experimental Studies of Citrus Pectin Gels," by Ruth Johnston.

"The Role of Acids in Fruit Jellies," by L. W. Tarr.

"Malic, Citric and Tartaric Acids in Fruit Jellies," by L. W. Tarr.

"What is a Fruit Jelly?" by H. A. Noyes.

"Vacuum Concentration in Preparation of Fruit Jellies," by H. A. Noyes.

"The Relation of Oxygen to Perforations in Canned Fruits," with lantern slides, by E. F. Kohman.

"Preliminary Report on the Suitability of Various Solvents for Extracting Vanilla Beans," by J. B. Wilson and J. W. Sale.

"Double Strength Jamaica Ginger Extract: Its Composition and Analysis," by B. H. Alderman, C. E. Marsh and H. C. Lythgoe.

"A Modified Test for Phthalates with Particular Reference to the Detection of Diethylphthalate," by R. E. Andrew.

"The Kreis Test," by George E. Holm and G. R. Greenbank.

"Biological Analysis of the Seed of the Cow Pea," with lantern slides, by J. W. Read and Barnett Sure.

"Biological Analysis of the 'Meal' of the Georgia Velvet Bean," with lantern slides, by J. W. Read.

"The Value of Dried Sweet Potatoes as a Diastatic Agent," by H. C. Gore.

"Bactericidal and Fungicidal Value of Furfural," by J. P. Trickey and C. E. Tharaldsen.

"Feeding Rats on Milk Treated with Active Chlorine," by Harrison Hale and J. W. Read.

Abstracts of some of these papers follow:

Studies of Citrus Pectin Gels

By RUTH JOHNSTIN

Estimations of pectin content based upon jellying power show that extracting in an autoclave even at slightly increased pressure causes considerable decomposition of the pectin. Citrus peel extracts prepared at five pounds pressure for thirty minutes have 25 per cent less jellying power than similar extracts prepared in an open kettle. At ten pounds pressure for thirty minutes the jellying power is almost completely destroyed.

Extracting with dilute acid in the open kettle produces marked increase in the yield of pectin of good jellying properties. Extracts from the white peel of oranges, prepared with 0.1 N citric acid show an increase in jellying power of over 100 per cent. The use of acid with pressure yields an extract of about the same jellying power as that of the open kettle without acid.

There are great discrepancies between apparent pectin content as indicated by the amount of alcohol precipitate and jellying power. In autoclave extracts the alcohol-precipitate determined in the usual way, is from 60 to more than 100 per cent higher, whereas the jellying power is from 25 to 100 per cent lower than in extracts from the same materials prepared in the open kettle. The percentage of alcohol precipitate in lemon extracts is considerably lower than that in orange, yet the jellying power of lemon extracts is about 20 per cent higher.

Measurements based upon jellying power furnish the only satisfactory means of estimating effective pectin content. This method, to be capable of general application, requires a device for measuring gel strength.

Acids in Fruit Jellies

By L. W. TARR

Maintaining pectin, sugar, and water as nearly constant as experimental conditions permit, jelly formation is shown to be directly correlated with the hydrogen ion concentration. Total acidity may vary over a wide range but the hydrogen ion concentration at which jelly formation occurs is practically constant, this being PH 3.46 for the purest pectin employed. Furthermore, the hydrogen ions are the sole precipitating agents, the anions exerting no effect that could be observed. The presence of neutral salts does probably reduce the hydrogen ion concentration at which the jelly can form. And the character of the jelly is also determined by the hydrogen ion concentration, other conditions being equal. A stoichiometrical relation is shown to exist between pectin and the combining power of the acids.

Oxygen in Canned Fruits

By E. F. KOHMAN

The rate and percentage of perforations in canned apples are proportional to the amount of oxygen in the can at the time of closure, provided other conditions are equal. Oxygen apparently does not act in a catalytical manner in this connection but rather according to the law of mass action.

The oxygen in canned apples does not disappear as rapidly as has been believed. In plain cans the oxygen in the head space disappears within a very few days and the bulk of the oxygen in the contents also disappears within a few days, but small amounts of oxygen may remain in the apples, at least for more than two weeks. In enameled cans the disappearance of oxygen is so slow that in three weeks it is scarcely appreciable. Apparently the rate at which it disappears is determined by the amount of metal not protected by the enamel. The small unprotected areas in an enameled can are therefore subjected to a much higher concentration of oxygen and for a far greater length of time than the metal in a plain can. We thus have an explanation for the fact that enameled cans tend to perforate more severely than plain cans. Although these results were arrived at through experiments with apples, they are believed to hold as well for all products.

The Douglas Packing Company Decision

Editor, The American Food Journal:

The decision of the United States Circuit Court of Appeals at Cincinnati, rendered on April 3, 1923, reversing the decision of Judge Westenhaver at Cleveland, in the case of U. S. vs. 95 Barrels of Vinegar (which was defended by Douglas Packing Company) is being made much of by that company although, when properly understood, its effect upon the whole question will be very limited.

After the condemnation of Douglas Packing Company's vinegar in Milwaukee in December, 1921, that company claimed that so much of its evidence had been excluded by the court as irrelevant that it had not had a fair trial. Thereupon the government as an experiment permitted Douglas Packing Company to propose a statement of facts which naturally contained the facts in support of the Douglas Packing Company's contentions but did not include any of the facts unfavorable to it. For example, this statement represented that Douglas Packing Company's vinegar was made during the apple season, between about September 25 and December 15, from sound, mature, unevaporated apples and for the balance of the year, from evaporated apples of like quality; that only mature, sound fruit, free from rot or ferment, was used at all and that the only object of evaporating it was to preserve it for such use.

Vinegar manufacturers will recognize that such statement, making no reference to dried skins and cores or dried chopped apples, and representing that such vinegar was made from evaporated sound, mature apples, is far from the actual facts.

The Circuit Court of Appeals at Cincinnati consists of three judges and the opinion indicates that only a majority concurred in it, which means that it was determined by a vote of two to one, although the dissenting judge did not indicate his dissent in the opinion. The opinion also plainly indicates that it is expressly limited to the facts before it, saying, "These issues must be determined solely upon consideration of the facts admitted (meaning the agreed statement of facts), regardless of the possibility that facts might have been established by evidence at variance therewith and more in harmony with a supposed public opinion upon this subject."

The result of the decision, therefore, which we desire to point out is that it is strictly limited to the agreed statement of facts before the court in this case, has little bearing or authority upon the other facts as they might or will be established upon the actual trial of other cases, and should not be deemed at all as finally settling the question involved, because of the failure of the facts before the court to disclose the actual source of the vinegar, which the record in the case now before the Court of Appeals indicates is made from dried skins and cores as well as dried chopped apples.

It will be well, therefore, for those contemplating entering into the manufacture of waste vinegar or dealing in it to reserve judgment on the question as to whether such product can be legally branded "apple cider vinegar." Other cases are being prosecuted and others undoubtedly will be so that the final determination of this question may not be reached for some time.

The net result of the experiment thus attempted by the government at Cleveland is that it failed to substantiate its contention upon a statement of facts prepared by Douglas Packing Company which did not fully reveal the facts nor truly state all that it attempted to reveal, and that it will be up to the government now to substantiate its contentions as it did at Milwaukee by refusing to further agree to statement of facts and prosecuting the charge of misbranding in the usual way by the actual trial of the issues involved.

W. W. ARMSTRONG

Counsel, American Cider and Vinegar Manufacturers' Association, Rochester, N. Y.

Food and Dairy Officials Meet

THE Seventh Annual Convention of the Central States Food Feed and Drug Officials' Association was held in Louisville, May 1 to 4, in conjunction with the Central States Food, Drugs and Dairy Officials Association. Among the papers read at the meeting were:

"The B. Coli Count of Milk Using Endo's Medium as an Index of the Sanitary Conditions in the Production and Handling of Dairy Products," by Dr. L. A. Brown, director, and Edwin Gott, bacteriologist, of the Public Service Laboratories, Lexington, Kentucky; "The Composition and Manufacture of Ice Cream," by E. O. Williams, of the Dairy Division of the United States Department of Agriculture; "Value of the Vegetable Histologist in the Detection of Adulteration of Food, Drugs and Feeding Stuffs," by Eugene L. Jackson, vegetable histologist, Feeding Stuffs Department, Kentucky Agricultural Experiment Station, Lexington; "Spoiled Food," by Charles Thom, Mycologist, Bureau of Chemistry, Washington; "Uniformity of Factory Inspection," by W. C. Geagley, State Analyst, Michigan Department of Agriculture;

Several of these papers will be published, in whole or in part, in an early issue of The American Food Journal.

The Best Things From Current Food Magazines

A Digest of the Month's Periodicals for the Busy Reader

Utilizing Dairy By-Products for Food

THE utilization of skimmilk, buttermilk, and whey from the cheese factory is discussed in "The Dairy Record" for March 28, by L. A. Rogers, who regards the conversion of these by-products as one of the greatest problems of the day. "The pigs and the poultry," he says, "should be utilized to convert into human food material which in its raw state is unavailable to us. The problem of the utilization of creamery and cheese factory wastes is much more far-reaching than the mere profitable selling of skimmilk or whey. The quality of both butter and cheese is tied up with the question of increased returns for the producers' milk through better merchandising of the by-products, and with this is involved the increased consumption of the main product which will follow an improvement in its quality.

"When it becomes more profitable to leave the whole milk at the creamery than to haul the skimmilk back to the farm, or to separate the milk at home and send the cream only, we can hope for a general improvement in the quality of butter. If fifteen or twenty cents per hundred could be added to the price of cheese milk through the sale of whey products the farmer would take more kindly to suggestions about better care of the milk."

When a satisfactory market can be developed, Mr. Logan believes that cottage cheese offers one of the most satisfactory outlets for skimmilk. The equipment required for making this product is simple and inexpensive, consisting of vats in which the milk is soured, drain racks and cloths for draining and salting the curd. Casein is not a profitable outlet, he believes, but it too can be made with inexpensive equipment, whenever there is a skimmilk surplus, and marketed when a sufficient supply has accumulated on hand.

Concentrated unsweetened skimmilk, which is now used extensively by ice cream manufacturers, is usually made in a vacuum pan with boilers of adequate capacity, forewarmer and cooling tank. This product sells at from twenty to thirty-five cents a gallon. The equipment for making sweetened condensed milk differs very little from that required for the evaporated product, and there is considerable demand for this from ice cream makers, confectioners and bakers. If properly made and stored it may be kept almost indefinitely and can be marketed when a carload has accumulated.

There will be a steady growth, Mr. Logan says, in the demand for skimmilk powder, for which a great variety of equipment may be used. Semi-solid buttermilk may be made from the same equipment as condensed or evaporated skim, and when concentrated is reduced to about one-third its volume, making transportation more convenient. Concentration also increases the acidity of the buttermilk, which acts as a preservative. Dried buttermilk powder may be made by concentrating the buttermilk in a vacuum pan and completing the drying on steam-heated drums. The selling price varies from six to ten cents a pound, and it is used extensively by makers of mixed feeds.

Cheese which can be made from whey is used almost entirely by Scandinavians and Italians in this country, and the demand is so slight that it cannot be said to be a satisfactory outlet for whey. The demand for milk sugar, which may be made profitably from whey, is limited almost entirely to its use in infant foods, and small requirements for a filler in tablets. A decrease in the price of milk sugar does not cause an increase in these uses or the development of new ones, and consequently over-production is very easily brought about. Milk sugar, therefore, does not offer a satisfactory outlet for a large quantity of whey.

Stale Bread Carelessly Handled and Insanitary

THE return of stale bread to the bakers from stores where it has been offered for sale has been proved an insanitary and dangerous practice by investigations of bread containers, grocery stores, bakeries and bakery wagons, described in the March issue of "Baking Technology" by Harold E. Turley, bacteriologist of the American Institute of Baking. The survey was made in Chicago, and covered sanitary grocery stores, those kept moderately clean and those that were insanitary. Its purpose was to discover (1) the sanitary conditions of the air that surrounded the bread during the process of handling; (2) the receptacles where it was kept and the micro-organisms that occurred on returned stale loaves as they were collected from the grocery store or the bakery.

Housewives, as well as grocers, will find considerable of interest in the results of this investigation: for bread crumbs gather daily in the bread box, which are quickly rendered a danger to the family health by bacteria or mold.

Plates of wort agar and potato dextrose agar were used in studying the sanitary conditions of the air. These were exposed in various places in thirty-three grocery stores. They produced such pus boils and abscess forming bacteria as Staphylococcus aureus and Staphylococcus albus; several species of Streptococci, which are associated with inflammatory conditions in man, and one colony of a haemolytic streptococcus were found that are very dangerous to man. The blood agar plates also produced some bacteria that are associated with respiratory infections such as Micrococcus catarrhalis and Micrococcus tetragenus.

The plates of the triple sugar potato agar revealed a large number of bacteria that are associated with putrefaction. The plates of Endo's agar produced large numbers of the B. Coli group of bacteria.

The molds that were found on the returned stales are given as follows: Rhizopus nigrican (whiskers) Aspergillus niger (black mold), various blue molds (Penicillium), several green molds known by the group name of Aspergillus, a dark green to black mold known as Alternaria and a few infections of a mold known as Fusarium.

Many plates produced large numbers of several species of yeasts.

Plates of culture media were exposed one minute each in a room at a bakery where stale bread was kept. One plate, exposed near the wrapping machine, before the "stale" room was entered, developed 2 mold and 12 bacterial colonies. A plate exposed in the stale room before the air was disturbed developed 7 molds and 32 colonies of bacteria. A minute later three armloads of bread (none of them moldy) were tossed in the room and a plate was exposed which developed 36 colonies of mold and 934 colonies of bacteria. A few minutes later a plate was again exposed near the wrapping machine and this time it developed 16 colonies of mold and 137 colonies of bacteria. There was no moldy bread in the stale room at the time of this experiment. Had any of the loaves that were tossed in the room been moldy the plates would have shown a far greater number of mold colonies than were shown by the plates in this experiment.

In many grocery stores, it was found, stale loaves were handled in insanitary ways; frequently they were put back into containers standing outside the store, for collection by drivers; in some places they were tossed into a pile on the floor to await removal.

Food officials have found at different times, Mr. Turley states, that in some cases stale bread has been resold by bakeries to other grocery stores. Even in the case of wrapped bread, he points out, this practice is unsafe, since approximately 90 per cent of the wrappers are broken when the bread is returned.

New Uses for Raisin and Raisin Waste Considered

THE time has arrived when it is imperative that new ways of using raisins be developed, says W. V. Cruess of the Fruit Products Laboratory of the University of California, in "The American Vinegar Industry and Fruit Products Journal," for March. Raisin bread is a very important user of raisins, but, he declares, this outlet cannot carry the entire load of tremendously increasing production.

The waste in stemming raisins, Mr. Cruess states, contains two valuable materials, oil bearing seeds and sugar bearing juice and pulp. One investigator places the amount of stemmer juice at four gallons per ton of raisins seeded. This material contains about 20 per cent sugar. The juice can be converted into a palatable syrup suitable for many purposes.

The loss in seeding raisins is estimated at from 8 per cent to 12 per cent; on an average of 10 per cent loss there would be approximately 4,500 tons of wet seeds obtained in the seeding of 25,000 tons of Muscats. Analyses by Rabak of the United States Department of Agriculture and others show that this material contains an average of about 20 per cent sugar.

There would be available from the seeder juice four times 45,000 tons or approximately 180,000 gallons of juice, and this at 20 per cent sugar is equivalent to approximately 45,000 gallons of raisin syrup. From the seed material would be obtainable also about 900 tons of sugar, which in the form of syrup would be equivalent to about 225,000 gallons. This is based on the assumption that the syrup would be prepared to contain eight pounds of sugar per gallon.

Mr. Cruess discusses various ways of utilizing this waste material, in the manufacture of raisin sugar, alcohol, and vinegar. He believes, however, that the problem of using the waste products from raisins is less important than that of finding new ways of using the raisins themselves. One of the important developments in this direction has been in canning the fruit. Canned raisins are somewhat moister than the carton packed goods and come from the can plump and syrupy with a very rich Muscat flavor. The product retains this moisture and does not dry out in the can with age. The raisins are ready to use in cakes, cookies, pies and other pastries and should be popular with housewives.

One great advantage of the canned raisins is that they will keep in any climate and for any length of time, because they are hermetically sealed and sterilized in the can. They will make possible the development of markets in the tropics, which in the past have been more or less closed to the ordinary carton packed product from this country.

New outlets for raisins, Mr. Cruess declares, should be studied without delay. He believes that growers could with great profit on the investment increase their research and studies of new products and by-products at least 500 per cent.

Good Eaters and World Beaters

Probably the whole people of Southern California live at a better average standard than a similar number of folks in any part of the world.

They live well because they can afford to, and in Southern California living well is the rule rather than the exception.

Last year the Los Angeles Times printed more advertising than any other newspaper in the world, in itself constituting the strongest argument why food purveyors should occupy important space in the Times.

Special food pages run twice a week, and the food department is in charge of Chef A. L. Wyman, M.C.A., whose articles are much sought and treasured by thousands of "good eaters."

Los Angeles Times

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225 Fifth Ave., New York.
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Consulting Marketing Counsel for Food Manufacturers

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Powers Heat Regulation Prevents Losses

Here Is The Proof!

Livingston Baking Co., Chicago

J. M. Livingston, *President, Says:*

"Every important step in the baking of our bread and pastry is automatically controlled by Powers' regulators, and we credit the maintenance of our high standard in baking largely to their use.

"The humidity of the air entering our baking and mixing department is regulated by a central humidifying equipment, controlled by a Powers' regulator, which also keeps the temperature at a minimum of 79 to 81 degrees Fahr., without varying over 1 degree Fahr. The temperature of our special traveling gas-heated oven is also automatically controlled by a Powers' regulator.

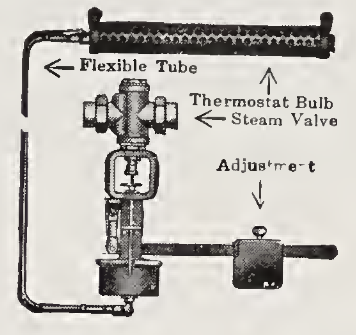
"In our mixing department the process is entirely controlled by the Powers' regulator. Our three special mixers operate at a high rate of speed, each turning out 1500 lbs. of dough every 15 minutes, as against 45 minutes for the same quantity with any other type of mixer. This method insures a more uniform loaf, lighter and better in quality, free from hard spots or air pockets.

"The mixing is done by air circulating up through the dough. This air is sterilized, cooled to a temperature of 18 degrees Fahr. and delivered to the mixer at the rate of 900 cu. ft. per minute. Its temperature is automatically controlled by a Powers' valve regulator governing the brine cooling coils, so that it varies only from 2 to 4 degrees Fahr. Such close control could not be obtained by hand regulation, and without it this very efficient method would not be possible."

Beyond a doubt there are places in your own business where just as great savings could be effected, as in the case cited herein. Let us solve your heat regulation problems as we have solved thousands of others. Any one of our representatives will call and go into the matter with you.

Powers' Regulator No. 15

Especially adapted for any process where even temperature of air is essential. Automatic, thermostatic, accurate, reliable. May be adjusted for different temperatures as desired. Entirely self-contained.



There is a Powers' Regulator for practically every industrial process where heat is a factor. They're simple, easily installed and operated. They will function for years without adjustments or repairs.

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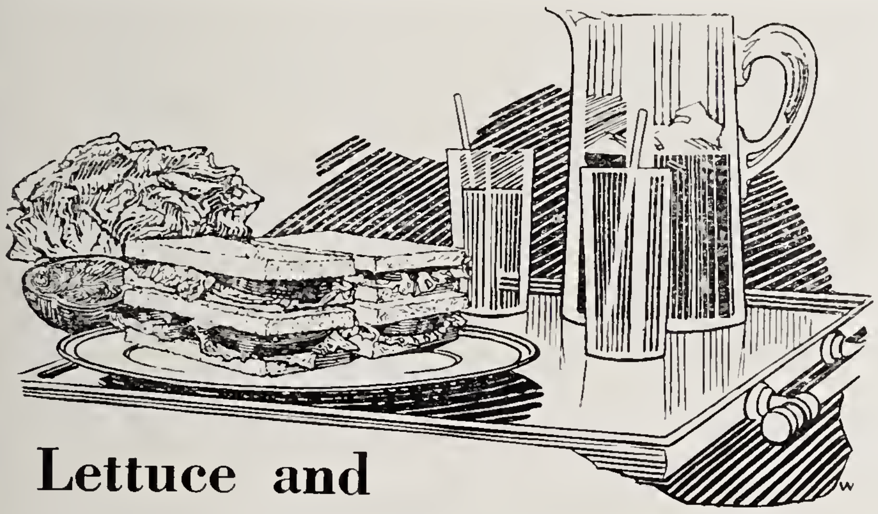

Lettuce and Tomato Sandwiches

CUT thin slices of bread, remove crusts and spread with wholesome Kingnut. Remove skins from ice-cold, ripe tomatoes, slice and place between slices of bread with crisp lettuce leaf above and below. Spread the tomato with mayonnaise and season with salt, pepper and dash of paprika.

Cocoanuts from far across the Pacific — peanuts from the Sunny South — and pure milk from green pastures—are put together to make Kingnut. That is why Kingnut is the most delicious spread for bread.

KINGNUT

Made from cocoanuts, peanuts and pure milk

57

Silver Tubes for Tomato Sauce

Nobody sees the inside of the pipes which carry the sauce to Heinz Baked Beans, Heinz Cooked Macaroni and others of the 57 Varieties. Yet all these pipes are lined with silver or glass, not to create an impression but to deliver to the tins a sauce which is unaffected by outside conditions.

Quality is the Heinz ideal and quality is a matter of watching each step in every process. In every department in the home of the 57 Varieties there is equipment designed, like the silver and glass lined pipes, to keep watch over Heinz Quality.

H. J. Heinz Company

57 Varieties

Tearing off a Dan seal

Two New Devices Aid in Sanitary Food Packing

In the Dan aluminum seal and the Dan automatic sealing machine the American Dan Bottle Seal Corporation has perfected two innovations which combine practical simplicity with sanitary properties. The Dan seal has been made flexible by the use of thin strips of aluminum, one of the lightest of known metals, and by means of either of two small tabs provided it may be torn around without the use of an opener. This makes possible the unsealing of any package by the mere tearing off of a comparatively soft but resistant metal cap, and also, since the seal is thereby destroyed, it makes practically impossible the refilling of the bottle. The aluminum does not rust or corrode, and the consumer is therefore assured of getting a sanitary package.

The Dan automatic sealing machine makes these seals from a ribbon of aluminum and applies them to bottles at the rate of five thousand an hour. It is so completely automatic that the seals are made, the corks or liners are introduced, and the capping effected in one operation at a cost for time and labor not greater than for capping alone on other machines. It is so designed that the trade mark or legend is embossed upon the aluminum cap while it is being made. This is done by means of embossing dies, which may be changed in less than five minutes—less time than is entailed in the changing of the filling machine from one beverage to another.

While the use of the Dan seal is practically unlimited it is especially adaptable to food products, where a sanitary package is in demand. Because the seals are made at the instant they are applied, the whole machine can be maintained in substantially a sterile condition, and the danger of bacteriological or other forms of contamination is declared to be practically eliminated.

Buffalo Gets Next Canners' Convention

The seventeenth annual convention of the National Canners' Association, the Canning Machinery and Supplies Association, and the National Food Brokers' Association, will be held at Buffalo the week of January 21, 1924. The Canning Machinery and Supplies Association has secured the Broadway Auditorium for its exhibit and applications for space should be addressed to J. A. Hanna, secretary, Cadiz, Ohio.

The Elmwood Music Hall has been secured for the canned foods exhibit and the committee hopes that advance information of this fact will enable the canners to reserve in stock the grades of canned foods which would be desirable for exhibition purposes. As soon as details regarding space, booths, and other matters in connection with the exhibit are worked out, the industry will be fully advised. In this connection, possession of both halls from January 14 to 31, inclusive, is granted. This will give ample time for installation of the exhibits prior to the opening of the convention. Both exhibit halls are situated within easy walking distance of the hotels.

Tampico Exports Tomatoes

The present season is the first since 1916 in which tomatoes have been produced for export in the Tampico district, says Vice-Consul Geo. P. Shaw in a report to the Department of Commerce. The two main producing sections lie north and west of Tampico for about sixty-two miles, extending into the State of San Luis Potosi.

About two hundred acres have been planted to tomatoes to be raised for export, and growers calculate the production at from five hundred to seven hundred crates of tomatoes per acre, or an export crop of approximately one hundred thousand crates of thirty pounds each. In the weekly bulletin of the Chamber of Commerce of the City of Mexico recently, the crop was estimated at about one-half this amount, but judging from the shipments made from the Tampico district, the first figures appear more nearly correct. The grower most heavily interested says that his tomato crop will be larger than was estimated at first.

The tomatoes are being raised by scientific American farmers; the land has been carefully prepared and is very rich. The crops are cultivated with care and are free from pests. The production is so plentiful that one frequently sees on a single plant from thirty to forty tomatoes, thick-skinned free from blemishes. In December first shipments were sent out to the United States in refrigerator cars.

American Raisin Grows in Popularity

The American raisin is making a new record in its invasion of the world's markets, accordng to the "Trade Record" of the National City Bank of New York. The total exports in the fiscal year 1923 which ends ninety days hence, will exceed 100,000,000 pounds against 50,000,000 in the fiscal year of 1922, and 75,000,000 in 1916. The value of the year's exports will approximate $15,000,000 and will also exceed that of any earlier year.

Prior to the war, the Levant, fronting on the eastern end of the Mediterranean, was a large contributor to the world raisin markets, especially those of Europe. With the reduction in agricultural activities in that area during the war, production was greatly minimized, and raisins from the United States were largely imported by Europe and in some cases supplied to their troops in the field, and the world thus came to know the value of the American raisin. The Levant has now resumed its contributions of raisins to the world markets.

The growth in world popularity of our raisins is evidenced by the fact that the exports advanced from 16,000,000 pounds in 1913 to 56,000,000 in 1918, the closing year of the war, and 110,000,000 in 1919. With the return of the Levant to raisin production and exportation, however, our exports fell to 53,000,000 pounds in 1920 and 33,000,000 in our short crop year 1921. With the high record of production of 1922, however, which is materially in excess of any earlier year, our exports for the current fiscal year seem likely to equal the high record of 110,000,000 pounds in the calendar year 1919, in which the Levant had not yet re-entered the world markets.

Chilled Beef Exports Increase in Argentina

Sixty-two per cent of the beef exported from Argentina during the first eleven months of 1922 consisted of the chilled product, according to a report issued by the United States Department of Agriculture. The apparent preference in foreign markets for chilled rather than frozen beef was one of the outstanding features of the Argentine meat export trade.

The combined exports of chilled and frozen beef during the first eleven months of 1922 amounted to 4,664,310 quarters, compared with 4,311,449 quarters during the corresponding period of 1921. In addition to the beef exports, Argentina exported 1,639,766 carcasses of frozen mutton and 1,241,543 carcasses of frozen lamb.

The present objective of the cattle raisers of Argentina, says the report, is to produce for export nothing but baby beef—killing the steers as two-year-olds when they should yield from 650 to 800 pounds of succulent meat.

Efforts are being made to develop a market for Argentina in the United States. In 1914 and 1915 a considerable quantity of beef was marketed in the United States, but shipments were interrupted by the World War.

Slauson Grocery Business Changes Hands

The wholesale grocery business of the C. E. Slauson Company, of Stamford, Connecticut, with a branch at Norwalk, one of the oldest established grocery businesses in the state, has been purchased by Francis H. Leggett & Company, and will hereafter be known as branches of that company. Mr. Slauson will be associated with the business as branch manager.

Margarin Manufacturers to Meet June 14-15

The executive committee of the Institute of Margarin Manufacturers announces that the Hotel Traymore, Atlantic City, has been selected as the meeting place of the fourth annual convention, to be held June 14 and 15. A program is in process of preparation.

New York Department Moves

Headquarters of the New York State Department of Farms and Markets has been removed from its old location at 90 West Broadway to 53 Park Place, New York City.

volume

There is good, steady volume in the sale of Carnation Milk, because it is the quality leader and is backed by strong advertising. It pays to be the Carnation Milkman. For sale by all jobbers.

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"From Contented Cows"

For Successful Home Baking

the right choice of baking powder is essential —a baking powder that, in addition to raising the dough in just the proper manner, adds nutritive value to the food. When you use

RUMFORD

"THE WHOLESOME"

BAKING POWDER

everything you bake will be more wholesome, more delicate in texture, more delicious in taste than ever before *Rumford* always produces the same perfect results at reasonable cost.

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The World's First Super-Bread

Ward's Vitovim Bread is a remarkable new development in food production based on the most recent discoveries in the field of human nutrition. It is the result of years of scientific research in the effort to produce a white bread which would contain enough of the essential nutrients of whole wheat and whole milk to promote normal growth and continued reproduction.

This delicious creamy white bread has been employed in feeding tests over a period of nearly two years. These experiments were carried on in our own laboratories and counterchecked by exhaustive tests in the Mellon Institute of Industrial Research of the University of Pittsburgh and in the laboratories of one of the foremost medical schools of the United States.

In these experiments animals fed on an exclusive diet of ordinary white bread or even ordinary whole wheat bread (made with little or no milk) failed to grow properly and soon died as a result of the dietary deficiencies of these foods.

In striking contrast, animals fed on an *exclusive* diet of WARD'S VITOVIM BREAD and water grew in perfect health to normal size, mated and reproduced normal offspring to the fourth and fifth generation, with every prospect of indefinite continuance.

The reports of the various laboratories were in complete agreement and the facts thus established conclusively proved that this loaf of bread contains (a) wheat proteins sufficiently balanced with milk proteins for normal growth and strength, liberal amounts of the protective substance water-soluble B, (c) ample amounts of fat-soluble A, (d) a well-balanced variety of body, blood and bone-building mineral nutrients.

The superior nourishment of VITOVIM BREAD is principally due to an extract of wheat-germ, rich in vitamins and mineral salts and to the exclusive use of rich whole milk as the only liquid ingredients of the dough.

Vitovim Bread is now available at all grocery stores in the cities listed below and in towns within a radius of approximately 100 miles from each city. It will also soon be available in Cleveland and Youngstown, Ohio, and adjacent territory.

All competitive breads, homemade included, are challenged to equal the nutritional value of Vitovim Bread in public tests

WARD'S VITOVIM BREAD

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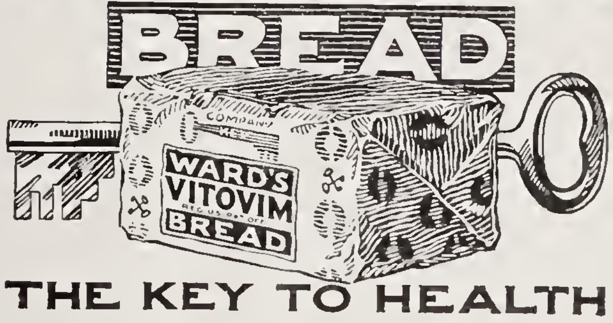

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Newark, N. J.	Columbus, Ohio	Syracuse, N. Y.

Association and Convention Calendar

American Association Creamery Butter Manufacturers, Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Association, 1135 Fullerton avenue, Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N. W., Washington, D. C. Secretary, Charles L. Parsons

American Cider and Vinegar Manufacturers' Association, 841 Powers Building, Rochester, N. Y. Annual meeting, June 6 Rochester, N. Y. Secretary, Paul Benton.

American Corn Millers' Federation, 332 South La Salle street, Chicago. Secretary, T. M. Chivington.

American Dietetic Association, Washington, D. C, Secretary, Beta Luther, Children's Hospital, Boston, Mass.

American Home Economics Association, 1211 Cathedral street, Baltimore. Alice F. Blood, Simmons College, Boston; Lenna F. Cooper, School of Home Economies, Battle Creek, Mich. Convention, July 30-August 3, Chicago.

American Macaroni Manufacturers' Association, 26 Front street, Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Association of Products from Corn, 208 South La Salle street, Chicago. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Association, 52 Park place, New York. Secretary, H. F. Thunhorst.

Association of Operative Millers, Postal Telegraph Building, Kansas City, Mo. Next convention, June 4 to 9, 1923. Secretary, M. F. Dillon.

Biscuit and Cracker Manufacturers' Association of America, 90 West Broadway, New York. Secretary, R. T. Stokes,

Flavoring Extract Manufacturers' Association of the United States. Secretary, Gordon M. Day, Day-Bergwall Co., Milwaukee, Wis.

Institute of American Meat Packers, 509 South Wabash avenue, Chicago. Secretary, W. W. Woods.

National Coffee Roasters' Association, 64 Water street, New York. Manager, Felix Coste.

National Association of Ice Cream Manufacturers, 155 North Clark street, Chicago. Secretary, N. Lowenstein.

National Association of Retail Grocers, 416 R. A. Long Building, Kansas City, Mo. Next annual convention at St. Paul, Minn., June 23 to 28, 1923. Secretary, H. C. Balsiger.

National Canners' Association, 1739 H street, N. W., Washington, D. C. Secretary, Frank E. Gorrell.

National Confectioners' Association, 11 West Washington street, Chicago. Convention at Atlantic City, May 23, 24 and 25, 1923. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan avenue, Chicago, Ill. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana avenue, Washington, D. C. Secretary, A. M. Loomis.

National Food Brokers' Association, 326 West Madison street, Chicago. Secretary, Paul Fishback.

National Macaroni Manufacturers' Association, Braidwood, Ill. Next meeting, June, 1923. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I street, N. W., Washington, D. C., Secretary, Charles W. Holman.

National Paper Box Manufacturers' Association, 112 North Broad street, Philadelphia. Secretary, William W. Baird.

National Pickle Packers' Association, 326 West Madison street, Chicago. Secretary, F. A. Vickers.

National Wholesale Grocers' Association. M. L. Toulme, 6 Harrison street, New York, secretary. Convention in St. Louis, Mo., May 16, 17 and 18.

Rice Millers' Association, 609 Maison Blanche Annex, New Orleans, La. Convention, May 31, 1923. Secretary, F. B. Wise.

Change of Grades Favored by Canners

Fixing of Standards by Federal Government Urged to Bring About Uniformity throughout Country

The thirty-eighth annual meeting of the Western Canners' Association was held in Milwaukee, April 10, 11 and 12, in conjunction with meetings of the Wisconsin Pea Packers' Association and the pea and corn sections of the National Canners' Association. The fixing of standards was the general topic of discussion, the pea section urging changes in the federal standards in the pea industry which would permit four instead of three grades. A resolution to this effect was adopted. C. C. McGillivray of the Canadian Department of Agriculture explained methods of fixing standards in Canada, with particular reference to canned peas.

John A. Hageman, of Fort Atkinson, president of the Western Canners' Asso-Association, declared:

"We want the label on every can of food to make clear to the consumer exactly what the can contains. The Department of Agriculture has fixed standards, but we want these made complete and in more detail so the buyer of a can of peas or other food will know the quality, name and size of contents, whether he is in Wisconsin or New York. Standards for canned goods have been fixed by order of the State Department of Markets, effective June 1 next year in Wisconsin, but we want these standards fixed by federal authority so they will be uniform throughout the country."

J. W. Hill, of Des Moines, was elected president of the Western Canners' Association; Clarence Turmail, vice-president; John A. Lee, secretary-treasurer. The following members were elected to the board of directors: J. W. Hill, Iowa; Clarence Turmail, Indiana; J. B. Weix, Wisconsin; J. E. Barr, Minnesota; H. L. Harrington, Utah; Mr. Van Zant, Colorado; Howard Orr, Ohio; Roy Nelson, Missouri; Walter Trego, Illinois; C. O. Dawson, Nebraska; William McEwin, Michigan; J. R. Stokely, Tennessee; Pendleton Lawrence, Kansas.

Former President of Canners' Association Dies

William C. Leitsch, president of the Columbus Canning Company, and one of the best known figures in the canning industry of the country, died of pneumonia at his home in Columbus, Wisconsin, on April 18. Mr. Leitsch has long been active in trade association circles, serving on various prominent committees of the National Canners' Association, of which he was at one time president. He was also interested in cattle raising and various branches of farming, and was treasurer of the Wisconsin Holstein Friesian Association at the time of his death.

The Canning Trade Almanac

The Almanac of The Canning Trade which has just been issued for 1923 is the eighth reference book of this kind to be published by that journal. It contains such information as the text of the National Pure Food Law, the cut-out weight of canned goods, the weight or measure branding laws of the different states, specifications for packing cases, statistics of the packs, prices and other data relating to crops and production.

Names of Canned Foods Must be Identified

Coined or fanciful names, which do not identify the product to which they are applied, such as "Camping Delight," "Luncheon Spread," "Breakfast Tasties," "Noontime Relish," will not be acceptable in the future as the true names of meat products sold in containers, according to a recent ruling of the Bureau of Animal Industry, United States Department of Agriculture. Such names may be used only when preceded by a qualification indicating the character of the product, as "Pork Camping Delight," or if followed on the container by a prominent statement of the ingredients arranged in the order of their percentages. In the absence of either of these qualifications the coined name must be accompanied by the statement "a meat food product" or similar acceptable statement.

Agreement to Fix Prices Charged

Bower Brothers, Inc., of Richmond, Virginia, coffee manufacturers, and several jobbers have been charged by the Federal Trade Commission with making cooperative agreements to fix and maintain standard resale prices. According to the complaint, Bower Brothers have entered into agreements with the jobbers to refuse to sell the Bowers coffee to dealers who do not abide by the prices fixed by respondent jobbers and other wholesale dealers. The jobbers named are Lipscomb-Russell Company, and Livingston and Company, Greenville, South Carolina, and Talmadge Brothers and Company, Athens, Georgia.

Sausage Company Charged With Unfair Competition

The Phillips Genuine Sausage Company, of Washington, D. C., has been charged by the Federal Trade Commission with confusing the public and carrying on unfair competition through the use of labels for its pork sausages having the appearance of labels previously used by the Joseph Phillips Company. The company consists of Mrs. E. M. Henning, Joseph M. Henning, C. Wesley Henning, and William E. Henning.

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Container End Stitcher
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Container End Stitchers Have Saved
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NEW YORK CHICAGO

Maine Regulates the Sale of Vinegar

New State Law Is Modeled on Proposed Uniform Vinegar Act of the Manufacturers' Association

Chapter 172 of the Laws of Maine, which became effective on April 3, contains careful definitions of all kinds of vinegar, limits the use of the term "cider vinegar" and "apple vinegar" to the expressed juice of clean, whole apples, and provides that packages shall be deemed misbranded.

First: If reduced with water, they are not so branded.

Second: If made from dried apples, skins, cores or chops, they are not branded to show that the vinegar is produced from such materials.

Third: If the label does not contain the name of the manufacturer or distributor and his place of business.

Fourth: If every container in which any vinegar is delivered to a customer except in an unbroken package does not bear a label stating the kind of vinegar so delivered and the substances from which it is made, and,

Fifth: If any package contains mixtures of two or more vinegars, it is not branded with the word "compound."

This act is modeled largely upon our proposed Uniform Vinegar Act and is quite in line with the uniform modern thought upon the subject. For the information of those of our members who wish to examine it more fully, it is given herewith:

An Act to Regulate the Sale of Vinegar

Sec. 1. No person shall, within this state, manufacture, sell, distribute, transport, offer or expose for sale, distribution or transportation, any product known as vinegar which is adulterated or misbranded within the meaning of this act.

Sec. 2. The terms "cider vinegar," "apple vinegar" shall be construed to mean the product made exclusively from the expressed juice of clean whole apples, by alcoholic and subsequent acetous fermentations, the acidity, solids and ash of which have been derived exclusively from the apples from which it was fermented.

The term "sugar vinegar" shall be construed to mean the product made by the alcoholic and subsequent acetous fermentations of solutions of sugar, syrup, molasses or refiner's syrup.

The term "malt vinegar" shall be construed to mean the product made by the alcoholic and subsequent acetous fermentations of an infusion of barley malt.

The term "wine vinegar" and "grape vinegar" shall be construed to mean the product made by the alcoholic and subsequent acetous fermentations of the juice of grapes.

The term "glucose vinegar" shall be construed to mean the product made by the alcoholic and subsequent acetous fermentations of solutions of corn sugar or glucose.

The terms "spirit vinegar," "distilled vinegar," "grain vinegar" shall be construed to mean the product made by the acetous fermentations of diluted distilled alcohol.

Sec. 3. For the purpose of this act vinegar shall be deemed to be adulterated:

First: If it contains any drugs, acids, coloring matter or ingredients not derived exclusively from the substances from which they were respectively made.

Second: If it contains less than four grams of acetic acid in one hundred cubic centimeters of the vinegar at seventy degrees Fahrenheit.

Third: If manufactured by the destructive distillation of wood, known as pyroligneous acid, or acetic acid derived from other sources than fruit, grain, vegetables, sugar or syrup.

Fourth: If it is found to contain any preparation of lead, copper, sulphur dioxide, sulphuric acid, other mineral acids or any substitute for vinegar produced other than by alcoholic and subsequent acetous fermentation or other ingredients injurious to health.

Sec. 4. For the purpose of this act vinegar shall be deemed to be misbranded:

First: If packages containing vinegar made from wine or fruits which have been reduced with water are not plainly marked or branded "Reduced to Four Per Centum Acid Strength" or "Reduced to Forty Grains," indicating the acidity to which it has been so reduced.

Second: If a product made from dried apples, or from apple skins, apple cores and chops by the process of grinding and soaking with subsequent alcoholic and acetous fermentations of the solution thus obtained is not plainly marked to show the material from which it is produced.

Third: If the package containing said vinegar or its label is not plainly branded with the name of the manufacturer or distributor and his place of business.

Fourth: If every container or receptacle which contains any vinegar other than pure cider or apple vinegar, except delivered to the purchaser in the unbroken packages, does not bear plain or conspicuous marks or brands, showing the kind of vinegar so delivered and the substance or substances from which it was made.

Fifth: If mixtures of two or more of the vinegars, above defined, are not plainly and conspicuously branded with the word "compound" together with the proportions of the vinegars so mixed.

Sec. 5. Any person who adulterates or misbrands, within the meaning of this act, any vinegar, or any person who manufactures, sells, distributes, transports, offers or exposes for sale, distribution or transportation any vinegar in violation of any of the provisions of this act shall be punished by a fine not exceeding one hundred dollars for the first offense, and by a fine not exceeding two hundred dollars for each subsequent offense.

Sec. 6. The provisions of this act shall not apply to railroad companies, steamboat companies, express companies or other common carriers of property coming under the jurisdiction of the Interstate Commerce Commission or the Public Utilities Commission of the State of Maine unless they knowingly violate it. App. Apr. 3.

Recent Patents

The following patents of interest to readers of this journal have been issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of twenty cents each. State number of patent and name of inventor when ordering.

1,445,785. Cheese-drying process. Julius R. Meyers, Evanston, Ill.

1,445,786. Process of cheese packing. Julius R. Meyers, Evanston, Ill.

1,445,787. Cheese-cutting mechanism. Julius R. Meyers, Evanston, Ill.

1,445 816. Butter-container. Ellen Balley, Detroit.

1,445,843. Green-corn-husking machine. Samuel E. and William W. Morral, Morral, Ohio.

1,446,004. Lard substitute. Carleton Ellis, Montclair, N. J.

1,446 122. Sausage-twisting machine. Ferdinand Kruse, Port Richmond, N. Y.

1,446,189. Method of making candy. William B. Laskey, Marblehead, Mass.

1,446,200. Process of making whole-wheat cereal foods. Allen L. Mulkey, Seattle.

1,446 651. Continuous evaporator for vegetable and fruit pulps. Fernando C. Marzo, Placentia, Cal.

1,446,782. Packaged food product. Fleming D. Broun, New York, and William R. McAevey, Brooklyn, N. Y., assignors to "The Only Package Pie," Inc, New York City.

1,447,013. Process of making cocoa products. Nic H. de Graaf, Middletown, N. Y.

1,447,018. Process of making pecan butter. Edwin D. Friedman, Albany, and Solon G. Long, Moultrie, Ga., assignors to Nutsbest Packing Company, Albany, Ga.

1,447,054. Process of making bread. Fred R. Warner, Minneapolis, assignor to Theo. Hamm Brewing Company.

1,447,249. Apparatus for treating milk. Joseph M. W. Kitchen, East Orange, N. J.

1,447,250. Method of treating butter. Joseph M. W. Kitchen, East Orange, N. J.

1,447,251. Method of treating milk. Joseph M. W. Kitchen, East Orange, N. J.

1,447,252. Method of and means for treating lactic fluid. Joseph M. W. Kitchen, East Orange, N. J.

1,447,549. Bonbon-coating machine. J. C. Heilman, Cincinnati.

1,447,615. Means for preserving food. Fred B. Dallam, San Francisco.

1,447,789. Apparatus for comminuting and drying yeast. Edwin Klein, Voslau, Austria, assignor to Fleischmann Company.

1 447,914. Candy-making machine. Frank Waida, Chicago.

1,448,281 Process for the manufacture of meat-extractlike preparations. Bruno Rewald, Hamburg, Germany, assignor to Chemical Foundation.

1,448,431. Blanched brazil-nut kernel. Giuseppe M. Castruccio, Chicago, assignor to United Fig and Date Company.

1,448,512. Method of dehydrating vegetable, animal, and other materials. George H. Benjamin, New York City.

1,448,520. Treating brazil nuts. Giuseppe M. Castruccio, Chicago, assignor to United Fig and Date Company.

1,448,532. Machine for skinning and coring tomatoes. Hiram R. Harding, Wilmington, Del., assignor to Harding Peeling Machine Company, same place.

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The "Three R's" in Manufacturing

Trade Associations Owe the Country Complete and Reliable Statistics Showing Live Pictures of their Industries

By E. W. McCULLOUGH

Manager, Fabricated Production Department, United States Chamber of Commerce

Editor's Note: We have secured this article from Mr. McCullough because we believe that his suggestions regarding business statistics and cost systems will be of as great value to the food manufacturer as to manufacturers in other fields. He declares that the present confusion in business fields is due not so much to the reaction from the war as to the fact that we have not yet caught up mentally with our scientific and mechanical advances, and that there is an urgent need for trade associations and others to adjust themselves as rapidly as possible to the new conditions.

E. W. McCullough

IN putting our business domicile in order after the struggle for world peace there is apparent an insistent cry for a return to fundamentals or first principles—whatever those terms may mean in their several applications.

During the period referred to confusion reigned and business transactions were executed with a rapidity and expediency typical of a catch as catch can wrestling bout. The only goal seemed to be gain and to attain it the end seemed to justify the means. We have since paid the penalty for disregarding moral law and ethical rules to such an extent that there seems to be a real desire to begin again on the old solid foundations we used before shifting sand seemed easier and cheaper. Trade associations show new concern in setting up for the lines they represent ethical codes or business principles to guide new-comers in the industry and as a reminder to old-timers to observe.

Studies for the elimination of waste are going on constantly and the scientists and engineers are being turned loose to develop better products. We are truly entering a new era in industrial production, but where it may lead us will depend largely upon the good judgment and balance we maintain.

The Need for Efficiency

We are admonished to count the cost but we still have with us many of the class who guess at their costs and "meet the market," failing to realize that they have contributed to making it a bad market. They are of the same class who disregard the consumer's real needs and take pride in advertising that "they make whatever the trade calls for" regardless of the fact that it transforms a factory into a shop. This class considers the study of the business cycle the dream of the college professor and a waste of time —what is to be is to be—why worry? It is the age-long cry against efficiency and the results will be the same; the fittest will survive.

"Cost accounting," "simplification of varieties" and "truth in statistics" are today the important fundamentals in production, just as the three R's are the foundation stones of general education; but to acquire a full working knowledge of them and knit it into the fabric of a business will require much the same effort as follows primary education of any kind.

That a knowledge of costs is a business essential requires no emphasis, yet there is more fumbling in getting complete and accurate costs than most of us care to admit. We refuse to permit our accountant to force a cash balance for a discrepancy of ten cents. Our cost men constantly use "undefined" costs to supply a lack of completeness in their reckonings; yet this "undefined" represents money from the till paid for something.

Unquestionably accurate costing is a more difficult and different operation than general accounting, and much sympathy and consideration should be extended to the cost man in tuning up the plant and workmen to produce accurate figures and get the right measure of production at the same time.

A Simple Cost System

Cost accounting is not a mysterious operation. It is simply, by the application of common sense methods, to allocate every penny of money value in goods, labor, and expense used in production in such a way that when listed in statement form the manager or the banker can read it as readily as any other business statement. A cost system should be as simple as it is possible to make it and results should not be sought in most lines beyond what we might term commercial correctness; that is, a penny should not be followed to such an extreme that two are lost in the cost of recovering one; neither should there be looseness nor guessing.

Do not attempt the use of ready-made systems, but have one built to fit your business by some one who knows. Then see that your men who are to handle it understand it, and hold them responsible for accurate returns. When you entrust to their care your workmen, materials and property, you have as much a right to expect a correct accounting as from your cashier, and perhaps more so, for on the accuracy of your costs your profits largely depend. Uniform methods of cost reckoning are now in use where a commodity is made by a number of competing concerns, such as in the paper, brick, and printing lines, and the industry is represented by a trade association. Such an organization makes it possible to bring together the members of an industry for the study of any problem of common interest and can be made particularly useful in the development of a simple and effective cost system.

The Individual Cost System

An industry can and, as far as possible, should build its own cost system. In most lines today the majority of plants operate under cost systems, most of them different, but it is not difficult to create a committee of ten members selected from the cost men of the several plants. This committee, with an experienced cost man from the outside, can soon harmonize the existing systems and make them uniform as to fundamentals, which is as far as it is necessary to go to insure cost statements being made up in the same way and to include the same elements. This will promote intelligent competition without any infringement of law.

Once such a system is built and the committee themselves adopt it, it is easily sold to the remaining members of the industry, for it is adaptable to concerns large or small. Costing means application and effort — but it pays.

High Price of Variety

Now for the second "R," which we will call "wasteful varieties" and which is no less important than cost accounting to successful business.

In simple it means that if you carry too far the multiplication of varieties in making or selling goods you create waste. The real needs of the consumer should be carefully regarded but his whims largely discounted, for if you carry stock to meet them his fancies may change and cause you loss, but his needs change slowly. A manufacturer turns his factory into a small shop when he undertakes so many varieties of product that his machinery is halted most of the time making changes.

Small variety and large quantity is a fundamental in successful manufacturing and there must be the closest cooperation between sales and production managers to keep the plant in balance. During the war the government was compelled to call in producers in all lines and tell them they must reduce their varieties to a few standards, in order to get volume of production to supply the needs of the army and navy. This was as important as arms and shells.

Standardization

Since the war we fell back into old habits until the Chamber of Commerce, in cooperation with the secretary of commerce, began the study of industrial waste, and pointed out to the manufacturer, distributor and public what a big bill for waste is being paid for in making and carrying more varieties than necessary to meet real needs.

More than three hundred and fifty commodity lines were looked over and it was found that there were too many variations in kinds and sizes of shoes, bricks, saws, hammers, axes, chairs, automobile tires, glass, wood and metal containers, agricultural implements, fire hose connections, etc.; in fact, nearly every article of human consumption was made in too many varieties and so contributed to this bill of waste.

Special Types

No effort is being made to force action nor the use of a few patterns or types, but simply to eliminate the needless and unnecessary. The individual must retain the power of selection and be able to buy what he is willing to pay for, but there his rights cease; he should not be permitted to buy at standard line prices specials created to suit his fancy, thus forcing others to pay the extra cost—which is what happens when a factory undertakes to make "freak" styles and standard lines at the same time.

Specials belong to the custom-made class and should be charged for in keeping with their cost to produce and handle. Standard or regular goods should have in price benefits what is due from lower costs resulting from large production, but many lines are not getting this today for the reasons given. This is quite as much a consumer problem as one of the manufacturer.

Facts in Figures

The last "R" may be called "truthful statistics," this being, no doubt, the greatest need in charting commerce and industry today. No head of a business accepts the manager's story of conditions unless accompanied by a statement of facts in figures. Yet we are looking to the secretary of commerce to keep us informed on the state of business at home and abroad and to warn us of the shoals and danger spots with only a partial equipment of statistical facts. In 1920 we were placed at the mercy of the profiteer because we did not know what was being produced, what was in stock or storage and what was moving in shipment. When the cry of shortage went up, there was a pyramiding of orders and hoarding of goods, giving the speculator his opportunity. Then the house of cards came down and it was found in some lines that the supply was ample to cover needs for several years.

This could not have happened if, as in a few lines, there had been figures available monthly on production, shipments, stocks and sales. The bulk of production could have been traced to either consumption or hoarding and the remedy quickly applied. Mr. Hoover's appeal to industry for figures is as yet meeting only with partial success, but the tide is turning in the right direction and more figures are being supplied. Statistics are not only necessary to guide commerce nationally, but they are vital to the individual business man as well, for in the study of the business cycle or budgeting for the future he must have not only his past records to guide him, but trend charts based on figures for his line covering a period of years and such other lines as have a bearing on his, or affecting business in general. He must have a willingness to contribute his figures for the general good if he hopes to receive data equally dependable in return.

The Study of Fundamentals

Trade associations are potential agencies for gathering and presenting live pictures of their industries in figures, because they can determine as no other agency can whether the figures be technically correct. The secretary of commerce is looking to them for a heavy contribution, but there must be a country-wide willingness to give up for the common good.

Our country has made wonderful progress scientifically and in invention in the last decade—it is almost if not quite beyond our comprehension. A prominent authority recently suggested that our present confusion of thought was due not so much to the reaction from the war as to the fact that we had not caught up mentally with our scientific and mechanical advances. If this be true we may well study our fundamentals and adjust ourselves to meet these new conditions.

The Food Manufacturer's Opportunity

RECENTLY a manufacturer of a high grade food product suggested that it would be an advantage to the manufacturers if the Department of Agriculture would raise its standard for that product. He made the suggestion under the impression that the department could by fiat establish an arbitrary standard. I pointed out to him that except for prohibiting adulteration and misbranding as defined in the act, the department could establish no standard higher than that fixed by trade custom and that the first move in raising the standard must come from the concerted action of the manufacturers themselves.

The food official can render effective assistance to any association of manufacturers that desires to raise the standards for its products. One of the greatest obstacles met by the manufacturer in raising standards is the competition with lower priced, lower standard products. However, once a substantial portion of an industry can agree upon a definite standard for a given product and put that standard into practice so that it becomes a trade custom, then and not until then, the food official can promulgate that standard as an official standard and give it the full force of law.

The food official will gladly cooperate with food manufacturers in any movement that will result in higher grade, more wholesome food products. He is jointly responsible with the food manufacturer for the establishment of standards of quality for food products. Under the Federal Food and Drugs Act, standards of quality that go beyond the specific provisions of the law prohibiting adulteration and misbranding are based upon trade custom, and trade custom can be modified by the leaders of the industry. Although trade practice cannot legalize any form of adulteration or misbranding as defined by the act, no food standard that goes beyond the specific terms of the law can be maintained under the Federal Food and Drugs Act unless it can be shown to be based upon established trade custom.

This situation not only makes the food manufacturer jointly responsible with the food official for creating standards of quality for food products, but gives an opportunity for the leaders in the food industry to raise standards of quality by establishing trade customs that produce higher standards. Once a practice or a standard has been established as a trade custom, the food official can give it the force of law and so eliminate unfair competition with the few manufacturers who may not voluntarily follow the example of the leaders.

Trade customs cannot well be established by individual manufacturers but they can be established by national associations of manufacturers which embrace in their membership a substantial proportion of the individuals comprising the industry. In the long run no one benefits more from high quality food products than the manufacturers of such products, so it seems to me that the national associations of the various food industries can undertake no work that would be of greater benefit to them than the adoption of a deliberate plan to raise the standards of their products.

W G Campbell

Automatic Heat Control

Modern Retort-Control Systems Decrease Cost of Production While Improving Quality of Canned Goods

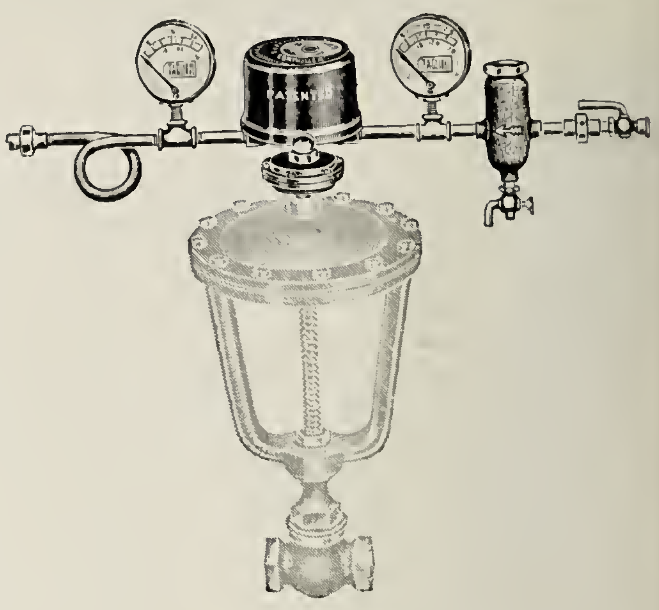
By VICTOR WICHUM
C. J. Tagliabue Manufacturing Company, Brooklyn

IN turning out a pack of high quality, consisting of uniformly firm, palatable goods that will retain their natural color and flavor, the automatic control of temperature and time is one of the most important factors in cutting down the cost of labor and fuel, as well as the danger of spoilage.

Too low a temperature during processing results in fermentation of the products, through bacteria which are not destroyed; too great heat harms the appearance of the goods and impairs the flavor. Hand regulation of the retort is too uncertain to bring about an even temperature, and even the most skilled and conscientious attendant is unable properly to manipulate the steam valve and keep the temperature constant in a number of kettles.

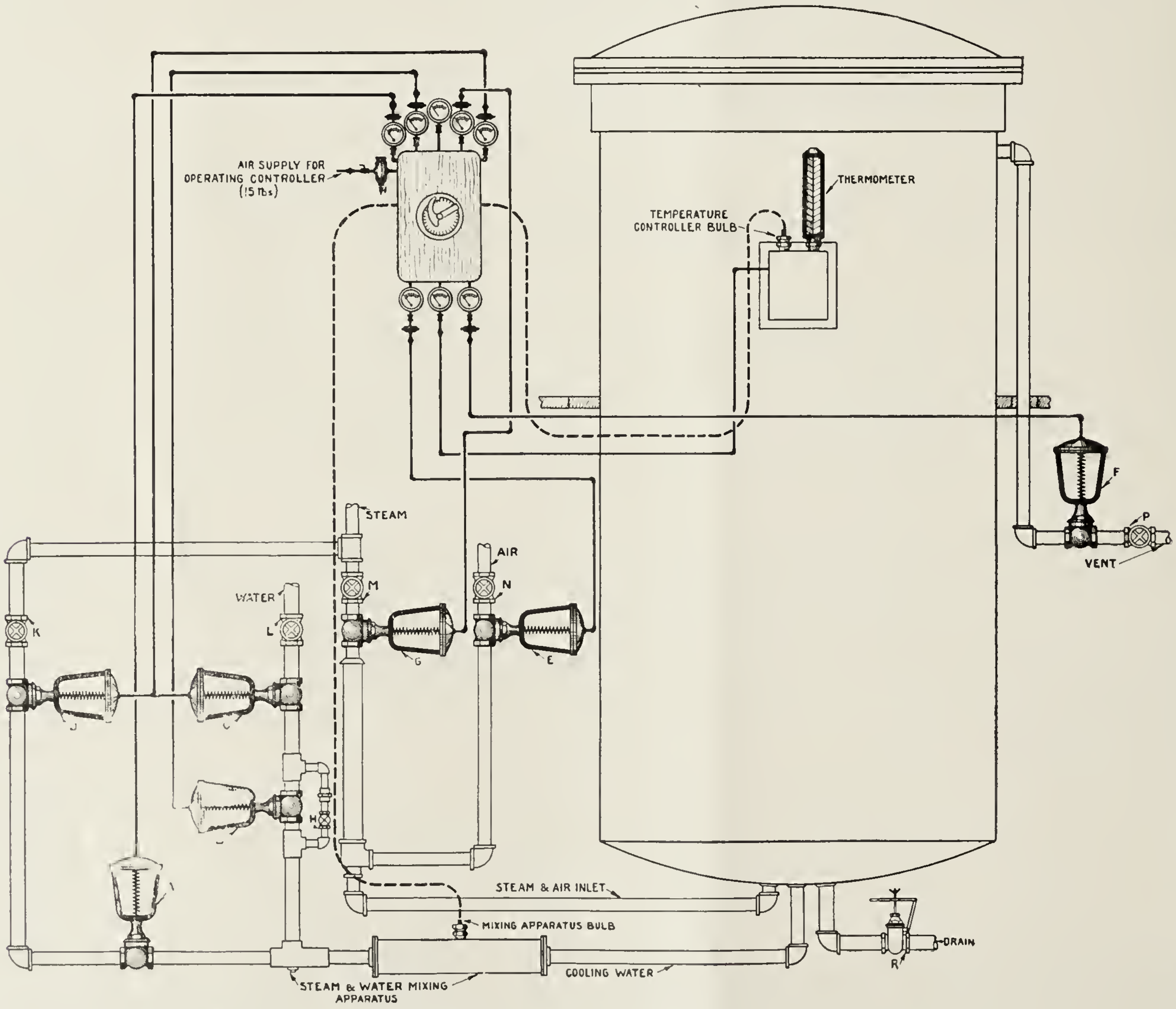
On retorts, kettles, exhaust boxes, pea blanchers and corn cooker-refillers, a uniform processing temperature may be effected by automatic controls throughout the apparatus. Accuracy may be further secured by the automatic time control, which requires no other attention than the setting of a pointer on the clockface of the instrument when the expiration of the cook is desired.

Retort-control systems have been an important factor in the development of the glass container industry, the automatic controlling apparatus making possible the packing of every kind of food product in glass, where it may be sealed in its raw state before cooking.



A compact controller which for close quarters and close control serves many uses on process kettles and retorts

The operator need only know in advance how long he should cook his product and at what temperature. With this in mind he loads the retort, sets the controller, turns on two or three valves, and forgets the processing until it is time to take the cooked product out of the retort. In the meantime the temperature in the retort has been automatically, but speedily brought up to the desired point; air pressure injected to prevent disruption of the closure of the jars; both the desired temperature and the air pressure maintained automatically with a variance of no more than 1 degree of temperature, or one-half pound pressure, and when the predetermined time has expired the temperature has been automatically reduced, by the injection of water, to the normal temperature of the room. All of these matters have been more accurately accomplished than would have been possible by hand. Any temperature may be maintained for any length of time, or any air pressure desired for the processing of food products may be prearranged by simple adjustments on the controller for each operation.


AIR SUPPLY FOR OPERATING CONTROLLER (15 lbs)
W
THERMOMETER
TEMPERATURE CONTROLLER BULB
STEAM
AIR
WATER
M
N
K
L
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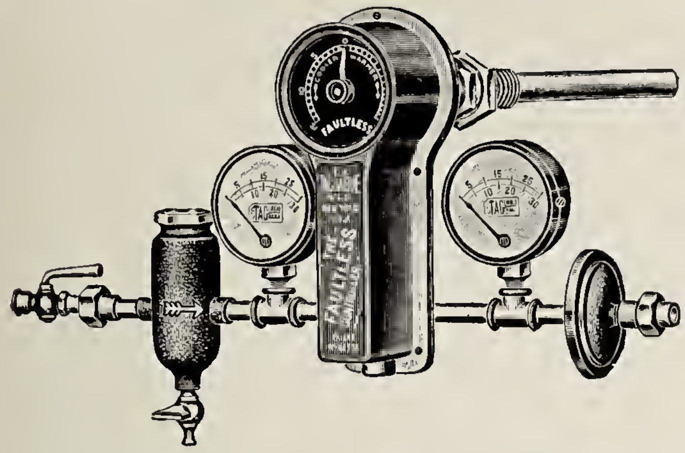
C
H
I
F
P
VENT
STEAM & AIR INLET
MIXING APPARATUS BULB
DRAIN
R
COOLING WATER
STEAM & WATER MIXING APPARATUS

Courtesy of Anchor Cap and Closure Company

Anchor Cap and Closure System[1]

The following directions for operating a widely used type of automatic control for



Temperature Control for Pea Blanchers

processing in water under water pressure indicate the extent to which this "set it and forget it" apparatus will replace human labor and thought:

The attendant fills the retort about half full of water and introduces steam by means of a hand valve to bring the temperature to about 100 degrees Fahrenheit. He then loads the retort and admits the water, which is under fifteen pounds pressure. He also sets the relief valve, to vent pressure in excess of sixteen pounds. In twenty minutes the temperature of the water is automatically brought to 230 degrees Fahrenheit. The controller maintains 230 degrees Fahrenheit, for a period of one hour, and then, by the introduction of cooling water automatically lowers the temperature. At the end of twenty minutes the controller, by means of an electric contact feature, rings a bell which summons the attendant for unloading. He shuts off the hand valve on the cooling water line and relieves the pressure.

Factors of time and temperature are adjustable in the controller to meet all the requirements of the cannery. The process has been installed in a great many plants and is long past the experimental stage. One type of controller is made which may be used for the pea blancher and for the corn cooker-filler, thus effecting an economy in equipment.

Anchor Cap and Closure System[1]

Before setting controller for processing operation, hand valves M, N, P, K, L and H are open while hand valve R is closed.

At the same time vent diaphragm-motor valve F is open while diaphragm-motor valve A, B, C, D, E and G are closed.

When the controller is set diaphragm-motor valves G and E open automatically and bring up the temperature and pressure as called for by the design of the cam. At the same time diaphragm-motor valve F, which is closed when the controller was set, is prepared to open if the pressure exceeds that which is required as the cooking progresses.

At the end of the cooking, diaphragm-motor valve G closes and diaphragm-motor valve C and D open.

The hand valve H on the by-pass in the water line which was open at the start will allow water to pass into the steam and water mixing apparatus. Diaphragm motor valve A then opens wide, while diaphragm motor valve B throttles until the temperature falls as low as 160 deg. F. Then the functioning of these two valves A and B, is reversed, so that valve B remains wide open and valve A throttles, causing the temperature to drop to 100 deg. F. and holding this temperature as required.

During the cooling operation the air pressure is reduced. The air pressure is maintained at 30 lbs. for 5 minutes after the steam has been shut off and then is gradually reduced as the cooling takes place. When the cooling has reached 100 deg. F. diaphragm-motor valve E closes and vent diaphragm-motor valve F. opens.

After maintaining 100 deg. F. for a predetermined length of time, diaphragm-motor valves A, B, C and D close and retort is drained by operating hand valve R. Retort may then be unloaded.

Phoenix Hermetic System[2]

A—Temperature—Time Controller.

B—Steam inlet diaphragm-motor valve.

B1—Water inlet diaphragm-motor valve (Duplex top).

D1—By-pass on water supply line.

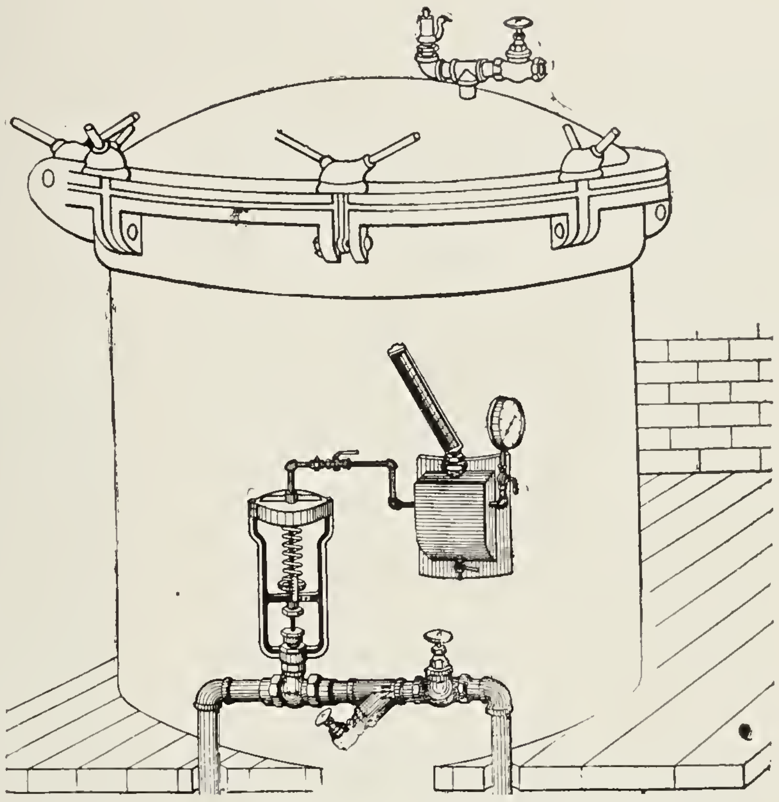
F—Drain.

G—Water relief valve.

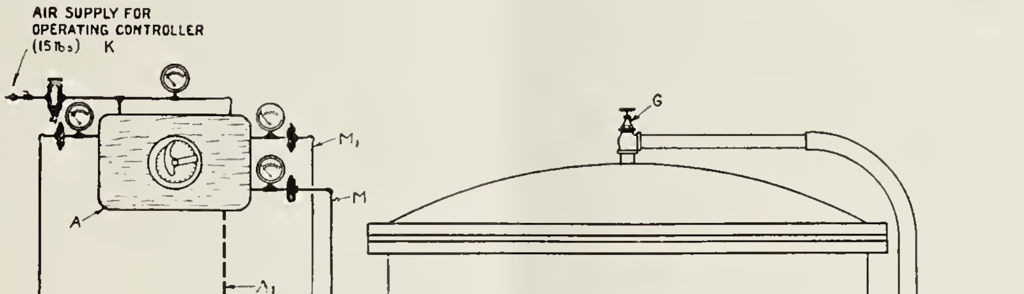
M—Air line from Controller A to diaphragm-motor valve B.

M1—Air line from Controller A to diaphragm-motor valve B1.

M2—Air line from Controller A to side of top of diaphragm-motor valve B1.



Self-Operating Control Installed on Retort


AIR SUPPLY FOR OPERATING CONTROLLER (15 lbs) K
M1
M
A
A1
M2
G
THERMOMETER N
TEMPERATURE CONTROLLER BULB A2
B1
WATER D
D1
FLEXIBLE CONNECTION
B
STEAM INLET C
F DRAIN

Phoenix Hermetic System[2]

How to Operate: Stop the clock in the controller A by means of the small lever on the right hand side of the clock and set cam at zero.

Fill the retort with tepid water to take off the chill and then load the retort and close the cover.

The relief valve G is set at the processing pressure.

Start the clock in the controller A and open the water and the steam valves wide and the controller will take care of the rest of the process.

At the end of the cooking or sterilizing process the controller shuts off the steam and regulates the cooling as required. At the end of the cooling, a bell rings signalling the attendant that the process is finished at which time he shuts off the steam and water lines, stops the clock, gradually releases the pressure and draws off enough water so cover can be opened and retort unloaded.

New-Style Tight-Wrapped Packages

Modern Container Hold the Moisture in Moistened Foods and Protects Dry Products from Dampness

By C. E. SCHAEFFER
Stokes and Smith Company, Philadelphia

BOTH rectangular and "round can" packages may now be wrapped by the rapid automatic wrapping machines which have developed from the slow-speed, hand-fed wrappers, themselves the "newest thing" in packaging only nine or ten years ago. The modern rectangular tight-wrapped package is in wide use for breakfast cereals, flour, dried fruits, crackers, salt, sugar, tea, coffee, soda, and numerous other foods. The "round can" package is also used for a number of cereals, and for coffee, salt, soap powders and similar products.

The new-style tight-wrapped container is a perfect protection against weevil in flour and breakfast foods, and keeps products fresh in their packages for an indefinite time. It will hold the moisture in foods that require this condition, and keep out the dampness from those that should be kept crisp and dry.

Some modern tight-wrapped packages

Many paper box manufacturers now supply the users of automatic wrappers not only with the plain folding boxes and paper cans which are wrapped by the new machine, but also the printed or lithographed wrappers required by the packers. These wrappers may be printed in colors or half-tone effects, and since the machine does not moisten them on the printed side they are not effected by the process of wrapping.

Great variety may be had in these wrappers, and it is unnecessary to dim striking color effects by re-wrapping in glazed paper to protect the product from weevil, since the process of sealing makes the entrance of the weevil an impossibility.

The plain rectangular cartons which are to be filled and tight-wrapped by the modern method are made of chipboard or newsboard. This is cut and creased either on platen or cylinder presses, from dies made of steel cutting and creasing rule. The carton is glued together at two ends, leaving at top and bottom four square flaps, which are sealed with adhesive after the package has been filled. Automatic filling machines are built to carry out all of the processes of opening the flat cartons, filling them to accurate weight, and finally sealing the flaps.

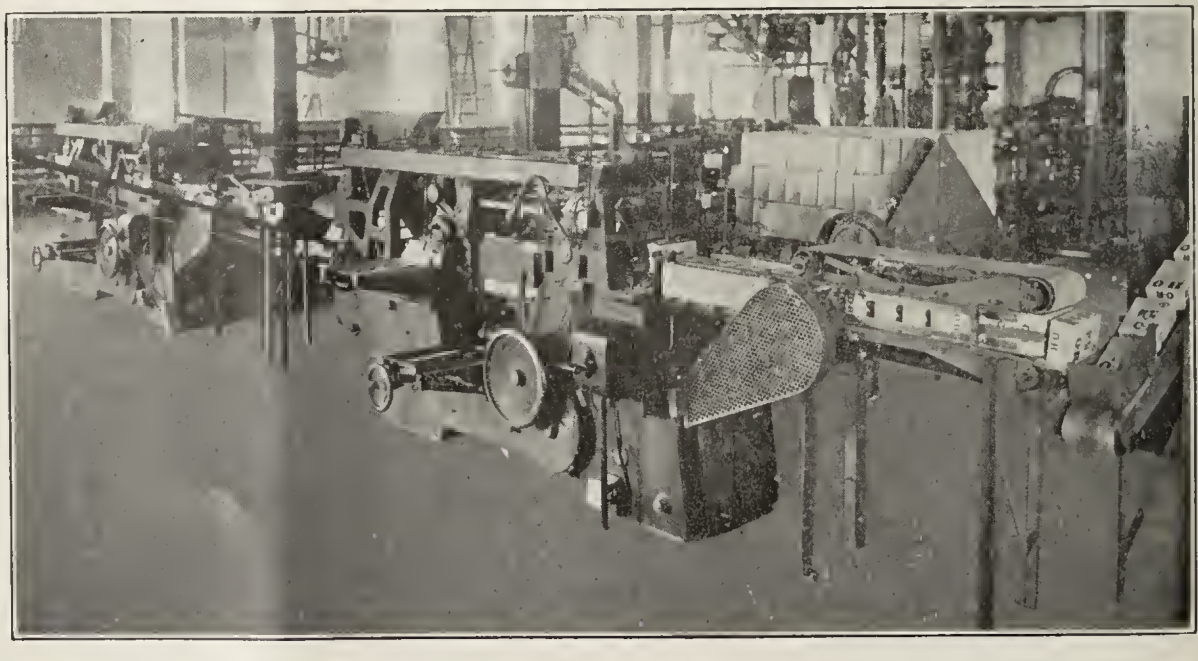
These partly wrapped packages are then carried on a carrier chain across the top of an automatic wrapper. Here they meet the glued wrapper which has been automatically coated with a thin, uniform covering of adhesive. The package is automatically turned in such a way that the glued wrapper is firmly applied to three sides and it is then taken by the carrier chain to the turret wheel, where brushes and rollers fold and seal the flaps of the wrapper accurately.

On the "round can" wrapping machine the wrapper is spread with adhesive over its entire surface and wrapped snugly around the can.

When these tight-wrapped packages come from the machine they are ready for immediate packing and shipment. An important advantage of the automatic wrapping machine is that it turns out packages thoroughly dried and ready for shipping. This results in a great saving of time, for in many plants where automatic machinery is used the packages are shipped immediately after leaving the packing room. In handling products which depend for their popularity upon absbolute freshness or crispness, as is particularly the case with cereals, this saving of the time once spent in the drying of packages is of considerable importance.

The increased strength of the carton, due to the adhesive and wrapper, has been estimated as 50 per cent. This means a saving in damaged packages and a substantial protection against the deterioration of contents which comes from cracked or slightly broken containers. All of these advantages taken together mean a considerable saving in labor and eventual cost of production.

The fully automatic machine will wrap as high as sixty packages a minute, maintaining this speed continuously. Each machine will wrap but one size of package, varying from the five-pound carton of flour to the five-cent newsstand package.



View of an up-to-date packaging room where automatic machinery is used

What the Macaroni Industry Has Accomplished

How American Manufacturers Have Met the Competition of "Made in Italy" Products

By M. J. DONNA
Secretary of the National Macaroni Manufacturers' Association

THE year 1895 stands out for the macaroni industry as a milestone on the road of development and progress. This was the year that saw the first successful efforts to combat the prejudice existing against the American product.

Prior to 1895 false labels abounded, some American manufacturers having yielded to the pressure of competition to the extent of labeling American goods, "Made in Italy." A number of the larger plants, such as the H. W. Mueller Company and others, blazed a new trail for the industry by adopting the honest label, "Made in America."

An important issue was thus met and won.

Coincident with the recognition of the American label came inquiries as to what might be done to raise the general standards of cleanliness. Naturally, the larger plants were operating in the most improved sanitary factories, but the tenement districts of lower New York were the scene of many a "drying," where sheets of paste were hung in the dust of "Little Italy's" streets, or, what was even worse, tucked casually in among clothing or placed in disconcerting proximity to the family bed.

Then there was the question of the flour used in composition of the different pastes. Every one was aware that spring wheat farina was the most desirable basis, but the use of this in turn required elaborate and expensive machinery, three times more pressure being needed for farina than for flour.

Again, the larger plants were meeting these requirements, turning out perfect products made from spring wheat farina and labeled honestly with an American label.

But there was the matter of responsibility to the entire industry.

So four or five of these "big brothers" got together, determined to work for the good of the whole. As is usual in such cases, one of their first steps was to organize. At the suggestion of Fred Becker, of the Pfaffmann Egg Noodle Company of Cleveland, now treasurer of the National Macaroni Manufacturers' Association, the leaders in the macaroni manufacturing field, in April, 1904, held a meeting in Pittsburgh and organized the National Association of Macaroni and Noodle Manufacturers of America.

In 1919 the name was shortened to the present one—the National Macaroni Manufacturers' Association. The headquarters and office of the national secretary are at Braidwood, Illinois.

Henry Mueller

The first macaroni organization consisted of about twenty leaders who organized for the purpose of promoting "cooperative competition" and "advancement of the industry." So well were these principles conceived that they are considered the basic principles of the national association of today.

The first staff of officials included some who are still affiliated with the present organization. Thomas Toomey, at that time connected with A. Zerega's Sons, Consolidated, of Brooklyn, now connected with the De Martini Macaroni Company of Jersey City, was the first vice-president. Ernesto Bisi of the United States Macaroni Factory of Carnegie, Pennsylvania, was second vice-president; Mr. Becker was the first treasurer, a position which he has held ever since. Edwin C. Forbes of Cleveland, was selected as secretary, filling the position until his resignation in 1919. Mr. Forbes was not a macaroni manufacturer, a policy of the association being that the secretary shall not be personally interested in a macaroni plant.

John A. S. Piccardo & Company, Pittsburgh; G. F. Artysinger of L. B. Eddy Company, Rochester; J. B. Bobb, of the Chardon Macaroni Company, Chardon, Ohio; V. V. Fontana, of the Pittsburgh Macaroni Factory at Allegheny, Pennsylvania, and H. A. Taylor, of the National Macaroni Company of Chicago, were chosen as the first board of directors. Henry D. Rossi, a director of the present organization, was a charter member of the parent group.

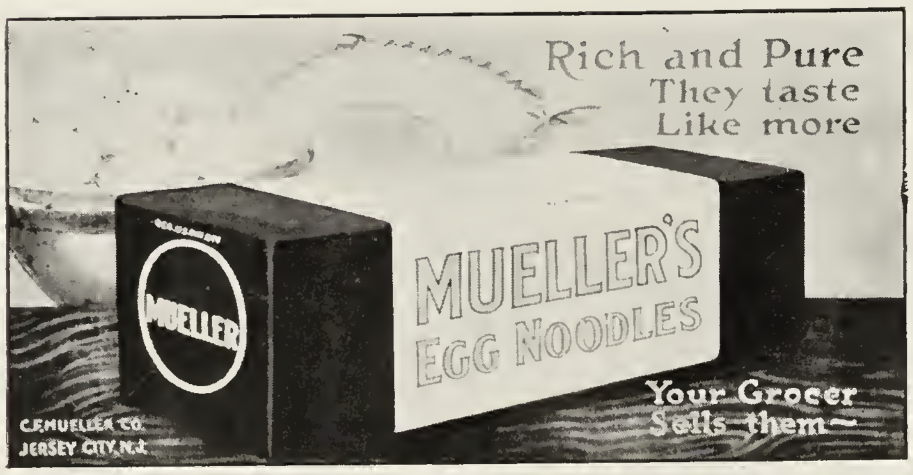
The progress of the national association has been slow. Of the five hundred and fifty macaroni plants of which this country boasts, less than one hundred are included in the progressive list. Two years ago, nearly all of these progressive firms were members of the national association.

Within the past few years a schism has been brought about by the organization of an eastern group mainly interested in the manufacture and distribution of bulk goods, and the organization of a package goods group a year ago in the Chicago district which has for its object the promotion of the sale of macaroni in packages. Practically all of the leading members of these smaller groups and local macaroni clubs in various cities of the country are also members of the national body.

The present organization consists of about seventy-five regular and associate members who are thoroughly sold on the need of organized effort to bring macaroni products into their own as among the most economical, delicious and nutritious food products now manufactured by Americans for the American table.

The present board of directors consists of the following: Henry Mueller, president of the D. F. Mueller Company, Jersey City; E. Z. Vermylen of A. Zerega's Sons, Brooklyn, first vice-president; F. X. Moosbrugger, Minnesota Macaroni Company, St. Paul, second vice president; Fred Becker, Pfaffman Egg Noodle Company, Cleveland, treasurer; the directors are, C. F. Yeager of A. C. Krumm & Sons Macaroni Company, Philadelphia; Henry D. Rossi, Peter Rossi & Sons of Braidwood; William A. Tharinger, Tharinger Macaroni Company, Milwaukee, and M. J. Donna, secretary. James T. Williams of the Creamette Company, of Minneapolis, former president of the national association, is also one of the active workers.

One of the outstanding accomplishments of the industry is the adoption of the following sanitary code. This is published in poster form and is furnished free to all members of the association.



Street car and window advertising is used

LOCATION AND CONSTRUCTION OF PLANT

1. Every macaroni factory shall conform to the requirements of the sanitary codes or other statutory provisions and regulations of the state in which it is situated, with respect to its location and construction, machinery equipment, operating methods and health of employees.

2. Every manufacturer shall, in any event, conform to the following specific requirements which this association deems essential.

(a) The factory shall be so located that drainage to sewers is adequate and that the basement and doors are not subject to recurring or foreseeable flooding.

(b) It shall not be located adjacent to conditions or industries which are inimical to the production of wholesome products.

(c) It shall have convenient toilet rooms, separate and apart from the room or rooms where the materials and doughs are kept and prepared, or where macaroni products are stored or handled.

(d) Adequate and convenient wash rooms and toilet rooms shall be provided with soap, running water, and clean towels, maintained in a sanitary condition.

(e) Rooms shall also be provided for changing and hanging wearing apparel, separate and apart from the production, storage and sales rooms.

(f) The factory shall be properly protected from flies.

(g) The factory shall have suitable equipment for handling raw materials, doughs and finished products in a cleanly and sanitary manner.

(h) There shall be sufficient ventilation and light provided to insure the health of the employees and the wholesomeness of the macaroni products, free from excessive heat, fumes, dust and other conditions inimical to such health or wholesomeness.

Operating Methods

(i) The floors, walls and ceilings of every factory, the equipment used in the preparation or handling of macaroni products, or their ingredients, and the vehicles, boxes, baskets and other receptacles in which macaroni products are stored, handled or transported, shall be kept in a clean and sanitary condition, free from all contaminating matter.

(j) All macaroni products and their ingredients shall be stored, handled, transported and kept in such a manner as to protect them from spoilage, contamination and unwholesomeness.

(k) The smoking, snuffing and chewing of tobacco shall be prohibited in that part of the factory where the materials and doughs are kept and prepared or where the macaroni products are stored or handled.

(l) No animals or fowls shall be kept in or permitted to enter that part of the factory where the materials and doughs are kept and prepared or where the macaroni products are stored or handled.

Health of Employees

(m) No person affected with any contagious, infectious or other disease or physical ailment, which may render such employment detrimental to the public health, shall work in a macaroni factory where he is required to handle macaroni products. It is suggested that employees handling macaroni products shall be required to furnish evidences of freedom of disease by a certificate of medical examination and that such examinations be made of employees annually.

One indication of the successful operation of the organization is the fact that the durum millers, the machinery builders and other allied trades are now working shoulder to shoulder with the macaroni industry. The following quotation from the secretary's report for 1922 will show the scope of the association's work and plans:

(n) No person who has had typhoid fever shall be employed in any factory until adequate clinical examination has proved the applicant free from typhoid bacilli.

During the past year the national association has stood firmly and solidly for all plans, measures and suggestions that would, in the estimation of its officers, be beneficial to the individual as well as to the industry. It was out of the question to expect wonderful results under conditions we have just passed through but, as may be expected, we overlooked no opportunity to pull together, and through concerted action and united effort have done fairly well toward solving some of the vexing problems that confronted us during this disastrous period.

The purpose of this association, like of all similar organizations, to twofold. First, our association should be an educational institution, aiming to teach our members and the industry we represent to progress along agreed lines, to follow honest business practices, eliminate unnecessary waste of efforts and materials, facilitate distribution, lower manufacturing cost, and to advance the grade or quality of the goods we manufacture. Second, your association serves as a connecting link between manufacturers, and also serves to bring about a more friendly relation between them and the allied trades and government bodies.....

Since the last convention this association has become a member of the Chamber of Commerce of the U. S. A. and has been working with the various department heads of that group for the betterment of general and specific conditions that have and are causing us so much worry. I feel that through harmonious cooperation with the officers of this well known business association the macaroni manufacturers of the country, and especially our members, are to derive some wonderful benefits in the near future. Intricate problems of the individuals as well as puzzling problems of the associations may be solved with the help of this, the country's leading business group.

The macaroni industry has accomplished these important results:

1. Honest labeling of American goods;
2. Appreciation of American products;
3. Organization of membership;
4. New sanitary laws;
5. Use of spring wheat farina in place of flour;
6. Popularizing of macaroni as a food.

The 1923 conference of the Macaroni Manufacturers of the United States and Canada and allied trades of the industry will be held June 12-14 in Sandusky, Ohio.

There will be addresses by the following: Professor A. W. Walster, North Dakota Agriculture College; Thomas Brown, Washburn-Crosby Company; W. E. Derrick, Pillsbury Flour Mills Company; W. E. Coles, Capital City Milling and Grain Company; Martin Luther, Minneapolis Milling Company; W. E. Onsdahl, Commander Mill Company; G. Meyer, Duluth-Superior Milling Company; Charles Wesley Dunn, Counsel for the American Specialty Manufacturers' Association; Mrs. Susa P. Moore, Associate Editor of The Nation's Health; Winifred Stuart Gibbs, Associate Editor of The American Food Journal.

A sample of display advertising

THE CONFERENCE TABLE

Imagination Versus the Treadmill

By JOHN D. HOUSTON
James W. Houston Company, Pittsburgh

Editor's Note—By way of rounding out our reports on the conventions of both the retail and wholesale grocers we asked John D. Houston, of the James W. Houston Company of Pittsburgh, to discuss for The Conference Table some of the questions now uppermost in the minds of those in the grocery field. Mr. Houston's response was most cordial and his remarks should furnish food for considerable thought.

THE wise man in the long ago said that there were three things, yea four, that he could not understand, but if he had lived in these latter days, with any connection with the grocery business, he would have added a fifth. That is—why the retail and wholesale grocer will consent to distribute so much manufacturers' advertised branded merchandise, on which the manufacturer has absolutely and arbitrarily fixed the distributor's profit, so that if the maximum is obtained, it does not cover present-day costs of doing business, and if less than the maximum is obtained, as is almost invariably the case, a heavy loss accrues to the distributor. This surpasses imaginative powers of even a superior order.

One of the most flattering tributes ever paid to the grocery business is the touching reluctance with which some of the Chicago packers separated themselves from it. Evidently they felt they had a plan on which to engage in it at a profit. Some of their methods were admirable. They sold grocery items on short time and net cash terms. Their salesmen were thoroughly disciplined and sold goods instead of auctioning them. They were never pestered with specialty salesmen calling on their trade, cutting prices or forcing on them lines of goods they did not care to handle.

An inspection of a grocery price list of the vintage of 1919 put out by one of the packers most active in the grocery field reveals a policy in startling contrast with the average wholesale grocer: there is not a solitary nationally advertised product of a specialty manufacturer quoted. These, with their inadequate fixed margins and slaughtered prices, the packers left to their rivals, the wholesale grocers, at the same time remarking that the grocers were a hundred years behind the times. In the packers' price list one finds commodities with speculative possibilities such as cheese, rice and beans, and private brands or exclusive agency merchandise covering every variety of canned goods, condiments, beverages, cereals, flavorings, dried fruits, and soaps. There are no sugar, tobacco, or the thousand silly novelties and junk which clutter up a wholesale grocery stock.

On this private label merchandise the packers could get competition in buying if they did not produce it themselves; consequently meeting competition in selling was easy. Especially was this the case when competing with the wholesale grocer who featured lines of manufacturers' advertised merchandise, heavily loaded with an advertising expense. Each packer carried his own private brands exclusively, and while Armour, Morris, and Wilson might be competing for business in the same market, the competition was on the LABEL and not a war of cut prices on some identical brand.

Wholesale grocer competition is of an entirely different character when all the houses handle the same brands of goods. Take, for instance, some popular brand of canned milk. The salesman of one house which is trying to get a price to pay for the cost of handling cannot argue that the supply his house has is better than that of a competitor who may be selling the stuff at cost. He either meets the price or passes the business.

It is possible to elaborate this point at length but space forbids. The conclusion, however, is inevitable, that the packers' plan would have produced a profit and enabled them to forge ahead while the wholesale grocer on his system was being bled white.

Grocery sales, either wholesale or retail, are of two classes, one in which the gross profit is less than the cost of doing business, the other where the gross profit is more. If these were placed in two columns and the cost of doing business deducted from each profit total, one would show an excess, the other a deficit. This deficit must be deducted from the excess to find the net profit, if any. Would not a proper cultivation of the imagination lead the trade to eliminate the items in the unprofitable column entirely, and concentrate on what does pay for the distributor's services?

In proportion to the number of human beings engaged in the calling, there is a minimum of romance connected with the term "grocer." It is apparently of necessity a sordid occupation, demands long hours and close application, calls for the practice of small economies and is burdened with an infinitude of detail. It must have been a grocer of the wholesale or retail variety that suggested to Wordsworth the thought in that sonnet beginning:

"The world is too much with us, late
and soon
Getting and spending, we lay waste
our powers.
Little we see in nature that is ours."

Some there have been who have used the calling as a stepping stone to fame and fortune—witness Russell Sage and Charles M. Schwab. But their success was due to their initiative in entering another line. Russell Sage might not have been the close and capable financier but for his training as a wholesale grocer, and Mr. Schwab might not have proved a successful steel manufacturer if he had not learned the value of industry as a grocer's clerk.

It is not to be denied that some have had outstanding success in the grocery field, but the number is insufficient to change the generalization of something less than mediocrity. An inquiry into the cause of the low estate into which the grocery business has fallen of late years might justify the conclusion that one of the chief contributing causes is lack of imagination.

In his wonderful descriptions of the tropical ants, William Beebe makes one visualize the seething activity of the myriads belonging to a colony, each one with some task that it carries through by instinct, or whatever the animating cause may be called; blindly and unreasoningly going through certain motions which are always the same under similar conditions, living to a large extent a troglodytic existence and free from any suggestion whatever of an imagination.

If all the retail grocers of the land could be assembled in one spot and reduced to the stature of Lilliputians, so that some Gulliver might describe them for the delectation of readers of his travels, the account would be strikingly similar to that of Beebe's ants. Now you see them toddling down to their various locations, before "night's candles are burnt out or jocund day stands tiptoe on the misty mountain tops" all prepared to cut the price on the same nationally advertised specialties to the same unprofitable level. They open up boxes and put the goods on the shelves, and hand them out, some for cash, some on credit, to people that come to the store, not knowing whether the sale was at a profit or a loss, but satisfied with keeping busy and shutting out thoughts of old age and overdue bills and landlords and chain stores and sheriffs. The picture of the wholesale grocer differs in degree only and not in kind. Both classes, if given some Shick test for susceptibility to imagination would show unfailingly negative results.

To make our meaning clearer, how many wholesale grocers are there who have sufficient imagination to grasp that there is any theory for conducting a business except volume? This is the law and the prophets to the vast majority. It might be termed the tread mill theory in that it involves a life of slavery and no compensation beyond what the victim requires to keep him fit for the grind. Again, how many grocers, either wholesale or retail, have the imagination to see that the cost of popularizing manufacturers' branded merchandise entails a sacrifice of their handling margin without any compensating reduction in expenses—a slashing of prices by those who use such things for advertising purposes, and a total loss of the identity of their establishments as they become mere slot machines? Can they realize that for every dollar's worth of goods sold at a loss, some other article must be loaded with an undue profit, and that in the end the consumer benefits not a whit; that the only one who does benefit is some manufacturer who by creating consumer demand gets free service from the distributors? How many can comprehend that if they were capable of judging the value of merchandise per se and selecting it from independent sources, the consumer would take it irrespective of whether the name appeared in the art supplements of the magazines? Does the wholesale grocer realize that on specialty manufacturers' merchandise, his field as a distributor is limited to a truck delivery radius, but that on private label or exclusive agency articles his territory is greatly extended?

Economy of the Delivery System

By PHILIP A. DePUYT

Editor's Note: Mr. DePuyt, a retail grocer in Rochester, N. Y., discusses here one of the problems of the retail grocer which he believes may be met by thoughtful service and trade practices meriting confidence and support.

IT seems to me that in the efforts to secure food supplies at the lowest cost to the consumer, perhaps undue stress is being laid on the saving that is made by purchasing on a cash basis and carrying these purchases home.

When a grocer of Rochester purchases supplies in some distant point —say, perhaps, New York City—his net cost is the price of the merchandise, plus the transportation charges and cartage, and it is on this net cost that he must base his selling price.

This situation is the same for the householder as it is for the merchant. It has been demonstrated that in our purchases from our local wholesale grocers, it is more economical to have the wholesale grocer deliver these orders to one hundred or more customers than it is for these one hundred or more customers to go to the wholesale grocer and do their own carting.

On the same basis it is more economical to have one hundred or more customers of the retail grocery store have their orders delivered than it is for them to go to the store and do their own delivering. If the housewife values her time and the effort required to go to the store and carry these goods home, in all kinds of weather, and under all conditions, she must inevitably come to this conclusion.

The question naturally arises—with so many grocers in every section — why not always patronize the nearest store? The answer is: Tastes differ and it is human nature to go to the store that caters to those by supplying the quality and varied assortments to select from. We believe in fair play. If such quality stores are to be maintained, is it fair for the consumer to use them simply to carry the heavy and bulky merchandise only, and would not the retail grocer be justified in making a legitimate charge for his service?

When such is the case, there are, fortunately, in almost every community, many families who recognize that the first class grocery stores are an economic factor in food distribution, that they satisfy a real need and that it is to their interest to patronize these stores. The opportunities for conducting a successful independent retail grocery business is as good today as it ever had been, for the reason that there will always be a demand for the kind of service that goes with individual ownership, and the first hand contact which this kind of business has with its customers.

The Need For Cooperation

By WILLIAM SMALL

THE retail grocer today must throw off this state of exhaustion, this careless spirit he has been suffering from for years and face the facts. He is beginning to wake up to the fact that somebody is shutting off the supply like the kink in the lawn hose. Many a retailer has been going on in the same old rut for years, but a cash-and-carry, or a chain store moves next door, and he finds out he is hobbled.

These are days of specialists. The retail grocer of the future must be a man of vision, efficiency, knowledge, and experience.

Do not allow a competitor to discourage you. Always be willing to renew the fight. Remember Browning's heartening phrase—"baffled to fight better." It is of no special credit to us as retailers that we guarantee service and satisfaction. The general public has every right to expect the very best that thoroughly pure food, and honest service can produce.

By our food we are known and by our service we have grown. We must believe in the goods we are handing out, in the business we are engaged in, and in our ability to get results. We must believe that honest goods can be passed out to honest people, by honest methods.

The conditions that exist today in the distribution of food products are undergoing a remarkable and peculiar change in the methods employed by the different retailers, and the character of the competition. You must observe the methods to which men engaged in the retail business have resorted. Until a few years ago competition was only thought of between retailers selling the same articles. Today competition is looked upon in a different light. It is recognized not between individuals, but between groups, not between articles, but between methods. The retail grocer used to recognize as his chief competitor his brother retailer and that competition I suppose to a certain extent still exists. But he is big enough to see his greatest competition is not with his fellow grocer, but with the mail order houses, chain store systems, and other large preferred retail buyers. I am not contending that those forms of competition are unfair. But I do contend that if the regular service retailer does not act so that he can protect himself against those gigantic systems and preferred buyers, he must retire from the grocery business.

As retailers we are certainly lacking in co-operation, because so many are not competent merchants. I am very glad to see so many of our western retailers are adapting new methods and showing splendid ability, and their businesses are growing every day. The retailers can find a solution to these problems only through organization and co-operation.

BOOK REVIEWS

Researches on Fungi. Volume I. An Account of the Production, Liberation, and Dispersion of the Spores of Hymenomycetes Treated Botanically and Physically. Volume II. Further investigations. By A. H. Reginald Buller, B.Sc., D.Sc., Ph.D., F. R. S. C. Illustrated. Longman Green and Company, New York. Vol. I., $5.00; vol. II., $8.50.

These two volumes, beautifully illustrated, present exhaustive and authoritative information on the physiology, morphology and physics of reproduction in the fungi. The functions of the various parts, the adjustments of fruit bodies, spore-deposits, the effect of humidity, Falck's theory, and the dispersal of spores are some of the topics discussed in Volume I.

Volume II is concerned with the same topics as relating to other varieties. The author's conclusion is that the adaptation of structure to function in the higher fungi is just as remarkable as that found in the Phanerogamia.

Eat and Be Healthy. The Diet Question Simplified. By Virgil MacMickle. The Universal Press, Chicago. $2.50.

According to the author the purpose of this book is to lay bare in understandable English the basic facts of human nutrition. Dr. MacMickle then proposes to give to the general reader "a thorough grasp of the problem of diet in health and disease."

Under the subtitles, "What," "How," "When," and "Why" of eating the author gives some practical help, although not all of his conclusions would seem to be based on authoritative findings; as, for example, when he says, "Don't eat much grain food." Again, Dr. MacMickle is prone to be dogmatic on the subject of diet in relation to obesity or leanness. The layman will do well to use the book under the advice of a specialist in nutrition.

What Shall We Have to Eat? A Practical Plan for Choosing the Right Foods for Every Occasion. By Jennie Ellis Burdick. The University Society, New York. $1.50.

The utter simplicity of this book together with its extreme practicality makes one wonder why just this very thing has never been done before!

By the common sense method of listing every known variation of the common foods and dishes under common sense and usable heads the author has succeeded in providing the dietitian or housewife with a kitchen handbook that is sure to prove invaluable.

The pages are not encumbered with discussions; simple questions such as, "What Shall We Have for Breakfast?" "For Dinner?" and "For Supper?" are asked and, what is more to the point, answered!

Similarly, the nurse or home dietitian is given help in feeding children and invalids.

The book is literally "something new under the sun."

Collette's Best Recipes. A Book of French Cookery. By Marie Jaques. Little, Brown and Company, Boston. $2.00.

Charmingly written and withal practical directions for achieving the results of the most experienced of French cooks. The scheme of presentation is novel, in that in place of the time honored and uninspiringly mathematical recipe, we have first-hand interpretation of the words of a veritable artist, a Frenchwoman who has been "making soup for fifty years!"

Soups and sauces, eggs and ragouts, leftovers, creams, confections and conserves! And even then you have not been told the half!

The indescribable, yet indispensable "touches" that distinguish the dishes of French cooks from those of the most learned of the other nations are described, yes, even to the French idiom that makes them "get across"!

The book is a real contribution to culinary literature.

The Microscopical Examination of Food and Drugs. A Practical Introduction to the Methods Adopted in the Microscopical Examinaion of Foods and Drugs, Drugs, in the Entire, Crushed and Powdered States. By Henry G. Greenish, F. I. C., F. L. S. Illustrated. Third Edition. P. Blakiston's Son and Company, Philadelphia. $4.50.

Dr. Greenish begins by earnest advice to the student in regard to understanding the anatomy of any drug. He then proceeds to suggest the recording of observations by means of sketches. These points once settled, the author is ready for the main portion of the work, that is, the careful study of starch, hairs and textile fibres, spores and glands, ergot, woods, stems, leaves, flowers, barks, seeds, fruits, rhizomes, roots and adulterants of powdered foods and drugs.

The book should be in the hands of all who have to do with the analysis of foods and drugs. Methods of examination are clearly described, microscopical appearances are accurately shown and the appendix gives a helpful list of the most commonly used solutions.

It is a book for those who are familiar with microscopy.

The Conquest of Constipation. By William S. Walsh, M.D. E. P. Dutton and Company, New York. $2.00.

That there are fads in medicine as well as in foods is Dr. Walsh's thesis, and he then proceeds to quote modern opinion, with illustrative instances, on the subject of constipation and auto-intoxication. The fact that many are needlessly worried about inactivity in the intestines seems to Dr. Walsh to have been conclusively proved, auto-intoxication being due, usually, to other causes.

The chapters on food and diet are simple and straightforward, for the most part presenting conclusions that are already known and accepted.

The book will be suggestive to all who are responsible for maintaining individuals or groups in good health, although it makes little or no claim to the reporting of original work.

Teeth, Diet and Health. By Kurt H. Thoma, D.M.D. The Century Company, New York. $2.00.

After a careful presentation of scientific facts in regard to the structure of the teeth and their relation to the general health, Dr. Thoma offers some interesting chapters on diet and good teeth.

Certainly any one reading these chapters will receive fresh inspiration to the study of dietetics, for he will realize as never before how vitamine deficiency may result in soft teeth, much pain and enormous dentist bills.

It is to our responsibility toward the rising generation, however, that the author appeals most vigorously, and parents, teachers and social workers will do well to heed his warnings and follow his precepts.

Nutrition of Mother and Child. By C. Ulysses Moore, M.D., M.Sc. (Ped.). Including Menus and Recipes by Myrtle Josephine Ferguson, B.S. in H. Ec. J. B. Lippincott Company, Philadelphia. $2.00.

Here we have a text book for the layman interested in human nutrition. The author has reviewed rapidly the earlier knowledge of dietetics and the later developments and has successfully related the results of each. The book then goes on to consider such subjects as rickets, infant feeding in health and disease, faulty diets and some common fallacies as met by the pediatrician.

The study of food factors and the metabolic requirements of the human body is clearly presented in non-technical language, and the mother, social worker, dietitian or teacher of health will find much that is stimulating and helpful.

EDITORIAL

One Way in Which the Group May Serve the Individual

THAT the point made by Walter G. Campbell, of the Bureau of Chemistry, in his message to food manufacturers in this issue is well taken, will be evident to all who study the food question from its various angles. Especially telling is the testimony on this point as borne out by the president of the National Wholesale Grocers' Association, J. W. Herscher, Jr., in his address at the recent convention of his association in St. Louis.

Mr. Herscher said, in part:

"In the nature of things, as a result of the unsettled conditions of the trade during recent years, I especially ask your careful attention to the Pure Food and Legislative Committee report, because the maintenance of this committee is possibly (except for abnormal cases), the costliest committee the association supports. One of the first acts of the association in 1906 was to urge upon the then President Roosevelt its hearty endorsement of the proposed Federal Pure Food and Drugs Act. Ever since then, our association, through this committee, has labored in and out of season to promote uniform food laws, with rules and regulations for their proper enforcement. Except for those men who have been on the committee, I make the assertion that most of you fail to realize the tremendous power for good the Pure Food and Legislative Committee has been.

"Congress has been in almost continuous session for ten years. Forty-two states were in session this past winter and some are still at it. Think of it, the last Congress considered over fourteen thousand bills, nine hundred and thirty-one of which were passed. Think of the state laws and municipal ordinances. You are supposed to know them all.

"Suppose for a moment, the National Wholesale Grocers' Association were to disband. Who would look after legislative matters affecting wholesale grocery distribution? How much would it cost the individual or even two or more wholesalers to keep posted on a bill in Congress or at some state capitol, which had some branding or formula requirement, not only crippling the wholesale distributor's business, but that of the manufacturer and retailer, as well as confusing the consuming public and making impossible, from a practical standpoint, shipping in interstate commerce? Do you realize that the National Wholesale Grocers' Association is the only organization in the country that conducts, in a thoroughgoing fashion, legislative work seeking the enactment of constructive laws in harmony with the Federal Pure Food and Drugs Act?"

Such a message from a man in Mr. Herscher's position should go a long way in helping Mr. Campbell and his colleagues in the Bureau of Chemistry in their efforts. Moreover, Mr. Herscher performs another notable service in that he calls attention to the dependence of the individual upon the organized group.

Correct the Abuses Which Have Crept Into Food Distribution

J. H. McLAURIN, president of the American Wholesale Grocers' Association, said recently at the convention of the association:

"The function of specialty salesmen and the rightful limitation upon that function constitute a question still to be solved by specialty salesmen and wholesale grocers. Each side complains much of the derelictions of the other side and each side has something to complain of. No progress can be achieved by complaints alone. What must be attained is the elimination of evil practices on the part of wholesale grocers, and they do exist, and the evil practices which specialty manufacturers still seem unable to a regrettable extent to correct in their representatives. This question, like all other questions that have harassed the trade, if approached with absolute fairness, with no desire on the part of either party to gain undue advantage of the other, can be satisfactorily settled."

It goes without saying that Mr. McLaurin has suggested the answer to the problem from the broad, general standpoint and representatives of both these important groups will unite in a wish to help him work out the details of a program of reform. What should be the several planks in such a program?

Granting that a fair-minded facing of a fault helps materially toward its correction, the wholesale grocer will admit that he sometimes makes a determined effort to substitute his own goods for those of the specialty manufacturer. The latter will acknowledge that he is inclined to allow the wholesale grocer too small a margin of profit.

In the last analysis, however, has not the wholesaler a wider opportunity for going counter to the best interests of his neighbor, the specialty man, than has the latter to defeat the ends of the wholesale grocer? May not this very fact mean that the wholesaler has an unusual opportunity for trade service?

A consistent program of safeguarding the interests of the specialty men might easily result in an aftermath of materially increased margins of profits; thus virtute would become in a very literal and material sense its own reward.

To refrain from practices that promise immediate gain because one's eyes are fixed on a future goal involving the greatest good to the greatest number is not "sentimental slush" but "good business" in the highest sense.

Remedying the Carelessness Which Leaves Older Goods on Jobbers' Shelves

THE American Specialty Manufacturers' Association occupies a strategic position in the food field, in that its members have often to deal with problems that are common to all groups. Its president, W. W. Frazier, Jr., in his recent speech before the convention of the American Wholesale Grocers' Association, raised an interesting point when he said:

"A matter that is of the highest importance to the manufacturer is reclamation for spoiled goods, largely due to lack of care in the jobbers' warehouses. Our association has from time to time urged the need of a suitable system that will get the oldest stock turned out first, and we trust to have your cooperation."

Both the jobber and the specialty man have an opportunity to help in this regard; the latter might well make it his business to see that careful directions for safeguarding his products accompany all consignments; while the jobber has a fine opportunity to cooperate by formulating a joint program that shall insure systematic moving of stock according to age.

True, both groups are already working on the problem, but if representatives from each would make it their business to get together NOW, draw up the plan of procedure this summer, and put it in operation IMMEDIATELY, jobbers and specialty men might unite in self-congratulation in being the means of setting in motion machinery that would make possible far-reaching improvement of our food supply and consequently of the public health and welfare.

The point is to do a finished job now while Mr. Frazier's words are fresh in the minds of specialty men and jobbers alike.

FOOD AND HEALTH EDUCATION

A Department of The American Food Journal
Edited by WINIFRED STUART GIBBS

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A City-Wide Campaign for Better Food

Cleveland Carries on the Work of Teaching Home Economics and Nutrition Lessons among Groups in Every Field

"YOU will see that I have tried to give other educators beside those in public school work a chance to show something of what they are doing also, and I hope that you will find it interesting," writes Miss Van Duzer, supervisor of home economics, in Cleveland. In transmitting the material which is featured in this issue of Food and Health Education Miss Van Duzer has performed a singularly helpful service in that she has shown how home economics "ties up" with other activities than the school class room.

Such a contribution should prove doubly valuable: to the class room teacher by giving her a sense of kinship with home economics workers in other lines; to the so-called field workers by making them conscious of their relationship to the class room work.

Adelaide Laura Van Duzer
Supervisor of Home Economics, Cleveland

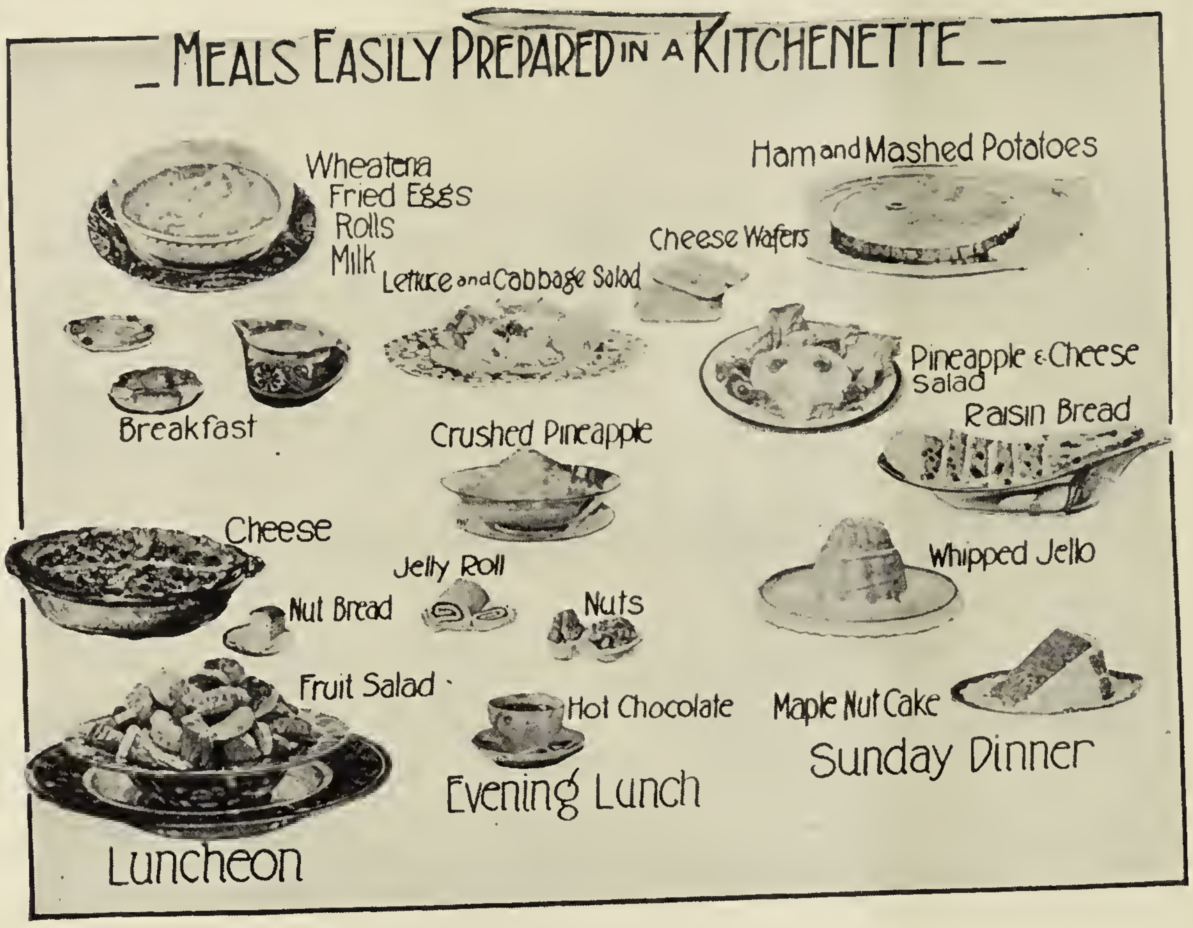
Home economics women who have followed the development of the profession know that there are certain well defined stages in this development. The early years were concerned largely with establishing a claim to recognition as a profession; the next step was to bring the academic relationships to as high a degree of perfection as was possible; the third stage was occupied with broadening the professional viewpoint of home economics women themselves and with taking advantage of subsequent new contacts thus brought about.

Even then not all class room teachers realized their opportunity. The very struggle for recognition had, with this attained, tended toward a certain withdrawal within professional limits. Gradually, however, this natural seclusion broke down, under the leadership of such women as Miss Van Duzer and a goodly company of other socially minded instructors and today all home economics women are proud to realize that class room teachers of domestic science claim kinship with workers in a number of allied fields.

The work in Cleveland, therefore, is presented as a civic unit; home economics in secondary schools, in junior high schools, normal courses, university courses, hospital social service work; United Charities work and savings bank service are also represented.

Such a piece of team work should give home economics women a new vision as to the importance of their specialty and of its place in community betterment.

In addition to this, Cleveland has shown its broad mindedness by passing on methods and sharing experiences with a sister city. The work done by Miss La Ganke in Oakland is an admirable illustration of this. In adapting the teaching of home economics to the communities in which it is taught the needs of the children in their homes was definitely and concretely met in that city.



Food Poster Made by Girls in East Technical High School, Cleveland, Showing Combinations of Foods Which May be Conveniently Prepared at Home

Food Lessons in Pictures

By CARLOTTA C. GREER

Home Economics Department, East Technical High School, Cleveland

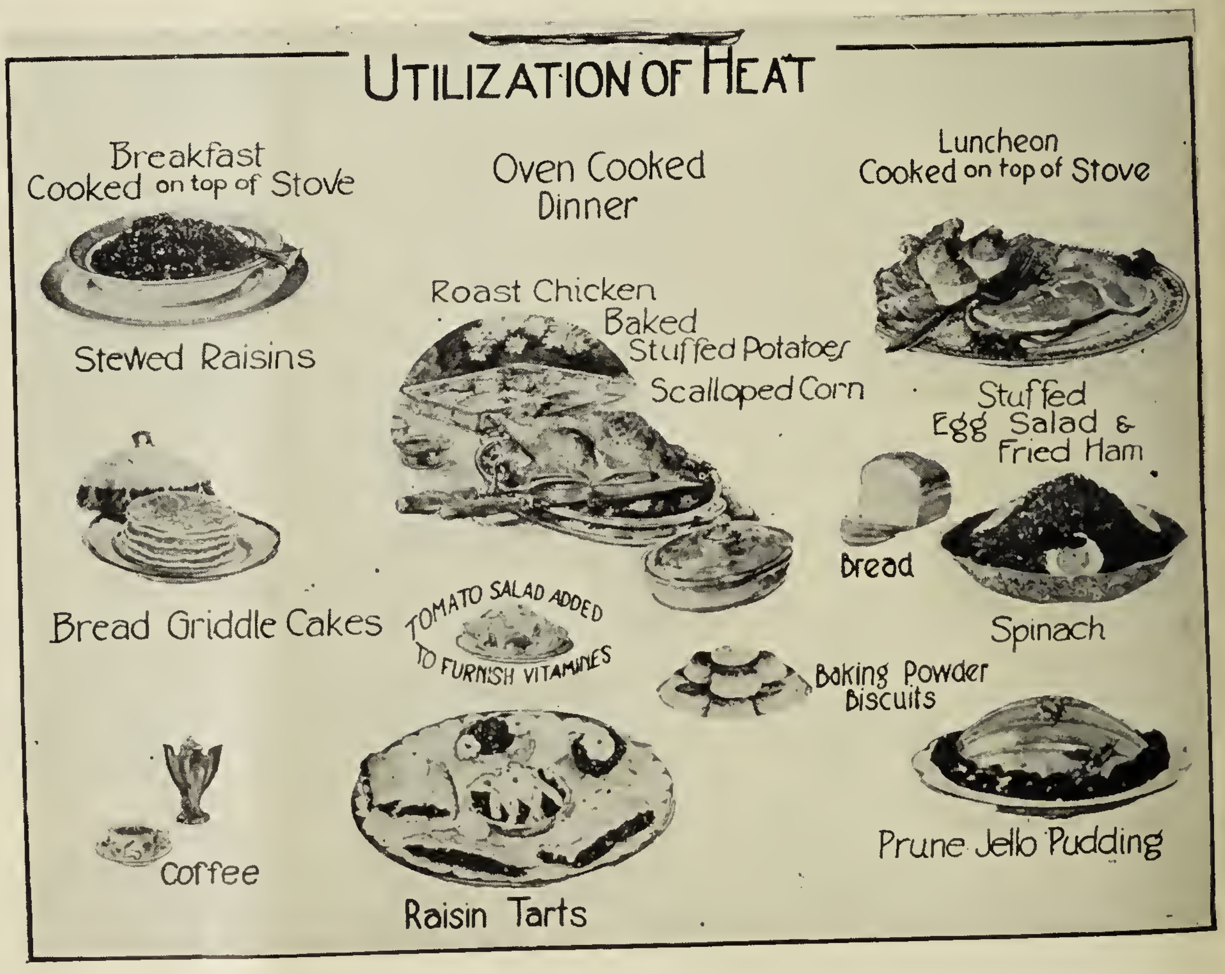
"OH, there's an illustration that will be fine for our Vitamine Poster," said a high school girl when she saw some colorful tomatoes on the cover of a seed catalogue. Another pupil exclaimed: "I've hunted in the advertising pages of every magazine I can find for an illustration of a bottle of milk and fine none." When the teacher suggested that an outline of a bottle of milk with the percentage composition of this food printed within the outline would make an effective illustration, the girl at once set to work to find the exact composition of milk in the United States Department of Agriculture Bulletin.

Enthusiasm such as was evidenced by these two girls permeated the class that was making posters to show the composition of food and what foods and dishes would make a nutritious as well as tasty meal.

In addition to the fact that the class became genuinely interested in the subject of food composition and food combination, the searching for suitable material and the assembling of that material in a striking illustration impressed the subject matter upon their minds most decidedly. In fact, this method was much more impressive and effective than studying the printed word or examining book illustrations.

Another factor that made this method effective was the variety of activity which it offered. Deciding what illustrations were needed in making the poster, searching for the illustrations, arranging and mounting them varied the work of the class-room in a satisfactory manner.

Poster making can be applied to subjects other than food composition and food combination. The possibilities of this type of teaching are many.



Posters Such as This Are Used to Teach Food Composition and Food Combination in East Technical High School, Cleveland

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Nellie O.

By MAE MACNAB

Director Cleveland Nutrition Clinic

NELLIE was nine and a half years old when enrolled in the nutrition class at Kinsman School. She was more than eight pounds, or 10 per cent underweight. Her physical examination showed that she had no physical defects to be corrected, and was therefore "free to gain."

She had been in the habit of drinking coffee, and taking no milk, or if any, a very little. Her step-mother was very much interested in having her become strong and healthy.

After she joined the nutrition class, Nellie gained steadily in weight every week, with the exception of one week when she lost two pounds on account of illness in the family.

She gained her average weight in nine weeks, but still followed the nutrition program and continued to gain until she was five pounds over the line, having gained seventeen and a half pounds in fifteen weeks. She changed from a pale, thin little girl to a happy, healthy and extremely attractive one.

Nellie has served as a shining example to her schoolmates as to the effect of nutritious foods on mind and body.

The Big Idea in Home Economics

By FLORENCE LA GANKE

Formerly director of Home Economics, Oakland, California

IN the days of my youth I was taught to obey those in authority and that habit has remained with me during the passing years. My first work in home economics was taken in the Cleveland schools with Miss Van Duzer as the instructor. When she asked me to do anything, I did it as a matter of course. In the course of my wanderings I have come back to Cleveland, and I find that when Miss Van Duzer requests me to do something, my early training comes to the fore, and I do it.

But it is not a Cleveland experience of which I am writing. I am going to travel far afield and write of Oakland, California, the last place with which I was associated in the field of education.

We worked for two years on a revision of the course of study. We did all the usual things with the usual results. We divided into committees; we found high school teachers repeating the work taught in the grades; we fumbled over objectives, aims and achievements.

Then we gave it all up and started from a new angle. We asked ourselves just what an Oakland girl should know by the time she had finished her work in the ninth grade. That may seem like an old and trite question. But I commend it to every supervisor and every teacher. The intelligent and honest answer to that question will go far in clarifying fuzzy thinking.

We made our list of achievements as definite and concrete as possible. This did not mean that we neglected a formulation of aims. But we did try to avoid "words, words." When we had finished we found that the elementary and junior high school teachers now had a definite goal and that high school teachers had a definite starting point. This eliminated difficulties of long standing. Up to the time I left Oakland this plan had not presented dangers of standardization nor of the deadly "lock step." In all of our thinking we had emphasized the need for problem solving on the part of the child, and for stimulation of judgment and critical appreciation.

We had made a cross section study of the home making in Oakland. We knew in what neighborhoods the mothers baked bread and in what places they bought bread but baked cake.

With this cross section in front of us, we evolved the list of achievements. I question whether any other community would have exactly the same list. But this variation is one of the most stimulating elements in tabulations of this sort. Aren't we all in danger of teaching our classes as we ourselves were taught? Don't we forget sometimes that the community in which we find ourselves may be an "eating out" community and is in need of an education which enables it to select its meals intelligently from a menu card.

We learned our community first, and then we aimed to meet that community's needs definitely and concretely. We thought clear through our problem.

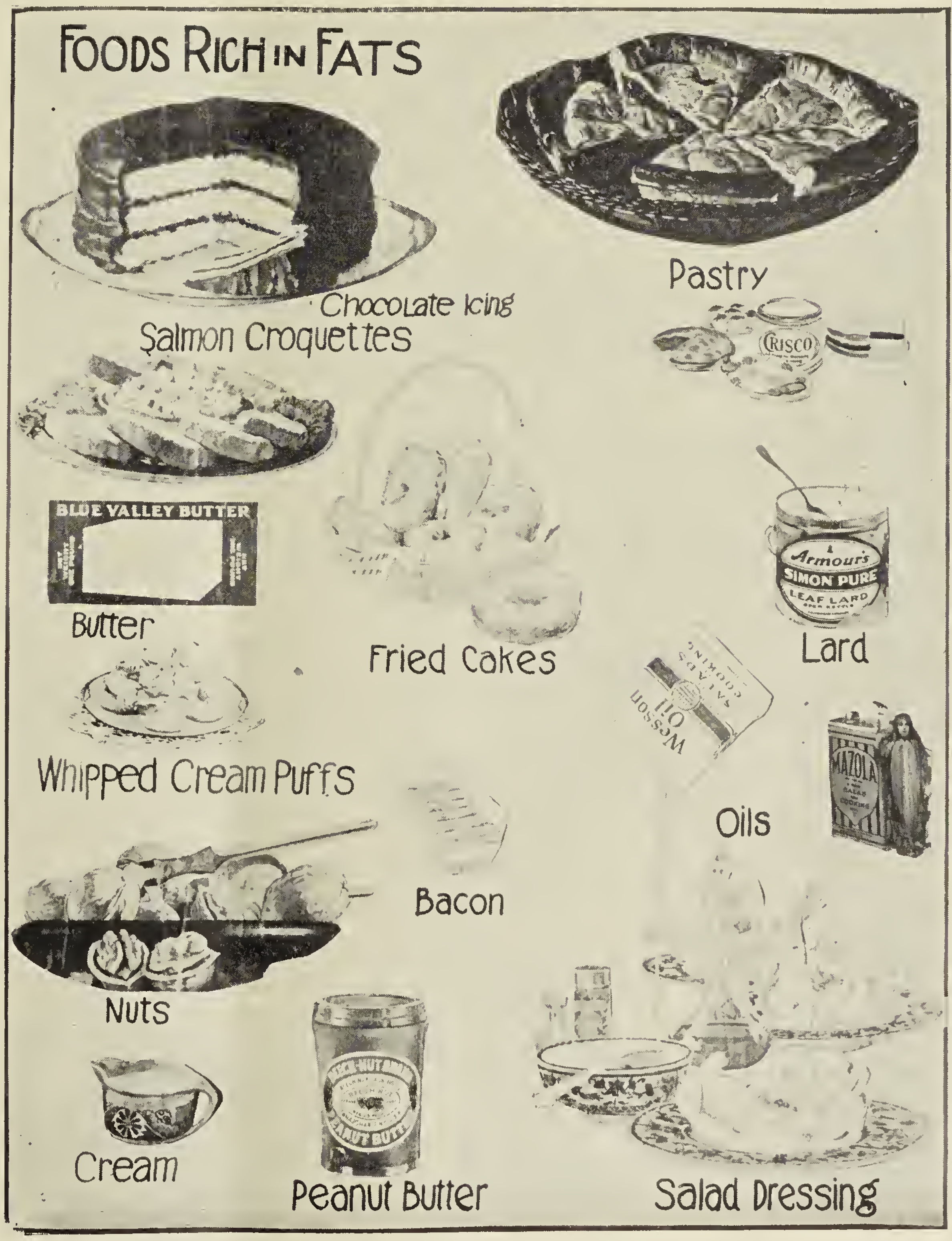
On working over the general subjects, we divided them as follows: food, clothing, sanitation and health, child care, house management and social relationships. From the minimum essentials in our achievement lists, I am selecting those pertaining to food, to sanitation and health.

Food:

1. Build a fire or light and care for a gas stove.
2. Can fruits and vegetables by cold pack process.
3. Set a table properly.
4. Plan simple meals for the average family.
5. Prepare and serve a simple breakfast, luncheon, and dinner.

Sanitation and health:

1. Intelligent practice of personal hygiene and health.
2. Prevention of the spread of minor diseases and illnesses such as colds, sore throats, skin and eye diseases.
3. Knowledge of ventilation, heating and lighting of home in order to be conducive to good health.
4. Knowledge of disposal of waste, e. g., garbage, rubbish, and human waste.
5. Knowledge of effects of impure water supply.
6. Care of stationary plumbing and other sanitary appliances.
7. Laundering of household linens, personal clothing and house furnishings.
8. Danger of household pests and means of extermination.
9. Simple household disinfectants, their use and care



A "Vitamine Poster" Made at West Technical High School, Cleveland

How to Tell a Real Prince

A Fairy Story for First-Grade Children

By MACRA E. PALM

Observation School of Cleveland School of Education

ONCE upon a time there was a little prince who lived in a wonderful palace. His father was a king and his mother was a beautiful queen.

The little prince had to go on a long journey to a far away city. Of course he couldn't go alone. There were brave knights who went with him to guard and protect him.

Their way led through a deep, dark forest. They had to sleep out of doors.

One night when they were sleeping, a band of robbers crept softly up and stole the little prince away. They took him to their den and there he had to live with other little boys—little beggar boys.

They took his pretty clothes from him and made him carry water, and cut wood, and do many hard things.

The king and queen did everything in their power to find their little son, but years went by and he grew to be a big boy.

One day a messenger went to the palace and said, "There is a band of robbers on the edge of the forest. The little prince may be with them." The king sent his soldiers, in haste, to see if it were true.

When the soldiers saw the beggar boys, they said, "Is there a little prince among you?" Then each boy said, "I'm the prince!" "I'm the prince!" They quarrelled and struck one another and cried, "I'm the prince! I'm the prince!"

The soldiers went back and said to the king, "We can't tell which one is the prince. They are all ragged and dirty. Each one says he is the prince."

Now there was a wise man in the town who heard about their trouble, and he said, "Bring them all to me."

The soldiers brought all the beggar boys before the wise man. He looked at each one and then, pointing to one boy, he said, "You are the prince!" The boy said, "Yes, I am he." And he told how he had been stolen away in the forest. Then there was great rejoicing in the palace, for the prince had been found.

Now, how do you think the wise man knew the little prince?

No, he had on old ragged clothes. No, his face was as dirty as theirs. His hair was not pretty. It had not been kept clean.

There was one thing that told he was a prince. It was the way he stood.

His head was up, his body was straight. He looked the wise man in the eyes. The other boys were stooped. They hung their heads. They were ashamed to look up.

I wonder how my little boys and girls stand! Let us see. Why, you stand like soldiers. You have nothing to be ashamed of. It is naughty children who hang their heads.

See this picture of Washington. How fine and straight and tall he is. And Lincoln and Roosevelt! They stand like soldiers.

Let us look at these pictures of beautiful children. Artists like to paint pictures of boys and girls who stand tall and have straight bodies.

Which of these boys do you like the best?

Let us push back in our seats and keep straight and fine like this. Then we will grow to be tall, strong, healthy boys and girls.

The story is adapted from one given in "Healthy Living," by C.-E. A. Winslow. Charles P. Merrill Company.

Health Laws

THE old school habit of committing literary "gems" to memory has come to life again in Lincoln Junior High School, where the teacher of hygiene has her pupils give one health law daily. No duplication is allowed in the class and no pupil should repeat himself during the semester. New laws are to be found on the blackboard every day and others are contributed by the pupils.

A few of our health laws are:

The good American tries to gain and to keep perfect health.

More milk, more health.

Cleanliness brings happiness and good cheer.

Start out with a clean handkerchief every morning.

Good food makes good blood.

We make our habits and our habits make us.

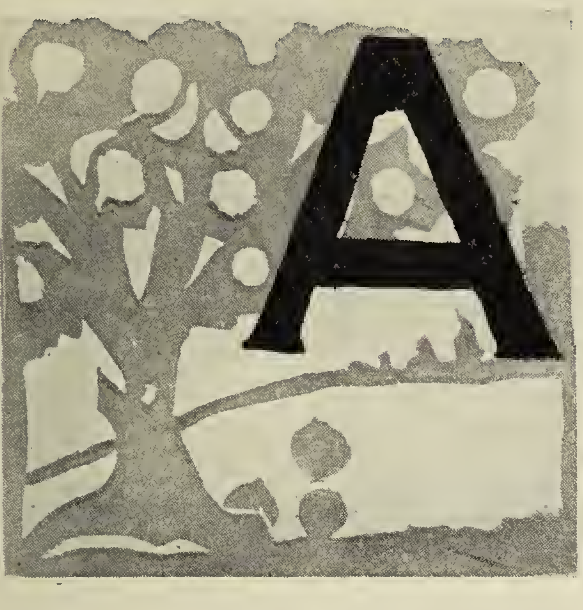
Candy and cake made your teeth ache,
Milk and bread make your cheeks red.

A Community Cook Book

THE cooking done in Kennard Junior High a school where many nationalities and races are represented, appeared to be nothing more than a school activity. No reports of work done in the homes were had, no mothers could be prevailed upon to visit the classes, and altogether it was a most discouraging situation.

At last, the pastor of a neighboring church with a strong social hold in the little community was called into consultation as to why it was so difficult to make a point of contact with the home. His opinion was that the foreign-born mother, speaking no English and seeing little outside of the four walls of her home, felt that no matter how far away from her her children seemed to stray in dress and manners, they were still dependent on her for their home comfort and was jealous of school interference, as she might deem it, in such matters.

Working on this basis, this school has been collecting recipes from the homes, getting them into a form that can be readily followed, cooking and serving them in the lunchroom. It is the intention to print these rules which are now about ready in book form in the school print shop, depending on the Art Department for the beauty of the make-up. They will then be sent



A is for Apples so bright and so red,
To eat one each day is good it is said.

back into the homes giving credit where credit is due in the hope that the school work may be seen as a help to a happy family life.

A Junior High Cooperative Problem

The "A. B. C. Health Book" was the result of a cooperative problem, worked out by the English, hygiene, art, and printing departments at Fairmount Junior High School. The following plan was carried out:

Hygiene: The subject material was developed in hygiene class time.

English: To secure original material for the clean-up program, initial lessons were given in verse-writing. The pupils suggested the theme of hygiene for their efforts and the result was the A. B. C. Health couplets. The interest was so keen that the children also wished to illustrate these verses.

Art: The same pupils were also in the art classes and so they asked for the privilege of working out appropriate designs. Here they not only made their designs but carved their linoleum blocks—two for each couplet, one for the illustration, the other for the capital letter.

Printing: The boys in the print shop developed the plan farther, and the book was also bound in this shop.

O is for Outdoors where we should all play
With skates and with sleds, on a cold winter's day.

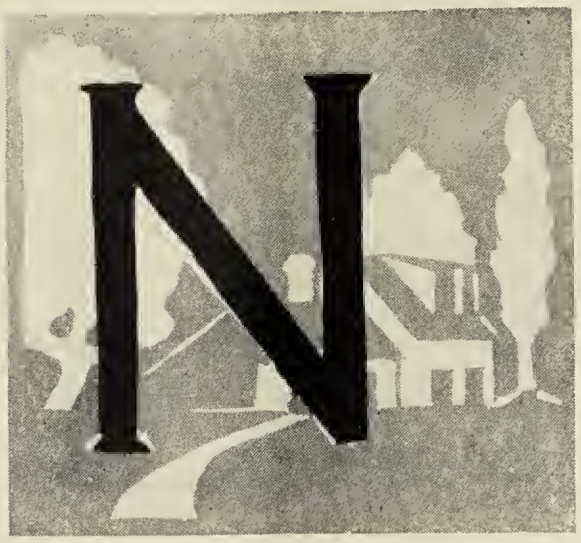
Preparing Nutrition Teachers

By MARY E. PARKER

Head of Household Administration Department, College for Women, Western Reserve University, Cleveland, Ohio

THE spirit of cooperation for which Cleveland has become famous and the admirable child-care program which is being carried on by public and private agencies make it possible for students in the Household Administration course at the College for Women, Western Reserve University, to supplement their study of foods and nutrition by observation and practical work in the city.

The public school system has generously opened its doors to our students for observation and practice and this cooperation has been not only delightful but exceedingly valuable; the department of sociology in the college is under the direction of Professor J. E. Cutler who is also dean of the School of Applied Social Sciences, and through his intimate knowledge of the different forms of social work in the city many contacts are possible: Lakeside Hospital is affiliated with the university through the School of Medicine and affords an unusual opportunity for studying health class work. These classes are conducted by a pediatrician of the hospital staff and representatives of the social service department.



N is for Night when all go to sleep;
By sleeping ten hours our health we will keep.

All home economics students meet the problem of the undernourished child in the sophomore year in a required course in dietetics with Professor Emma B. Matteson. All of the students, therefore, into whatever lines of specialized work they may go, have considerable understanding of the technique of nutrition class work.

In their junior year there is a requirement of two semester courses in practical sociology, in which they study modern conditions of housing and sanitation and the care and treatment of handicapped classes. Students study local agencies and become familiar with the ways in which the work of the schools or of any social agency may be supplemented.

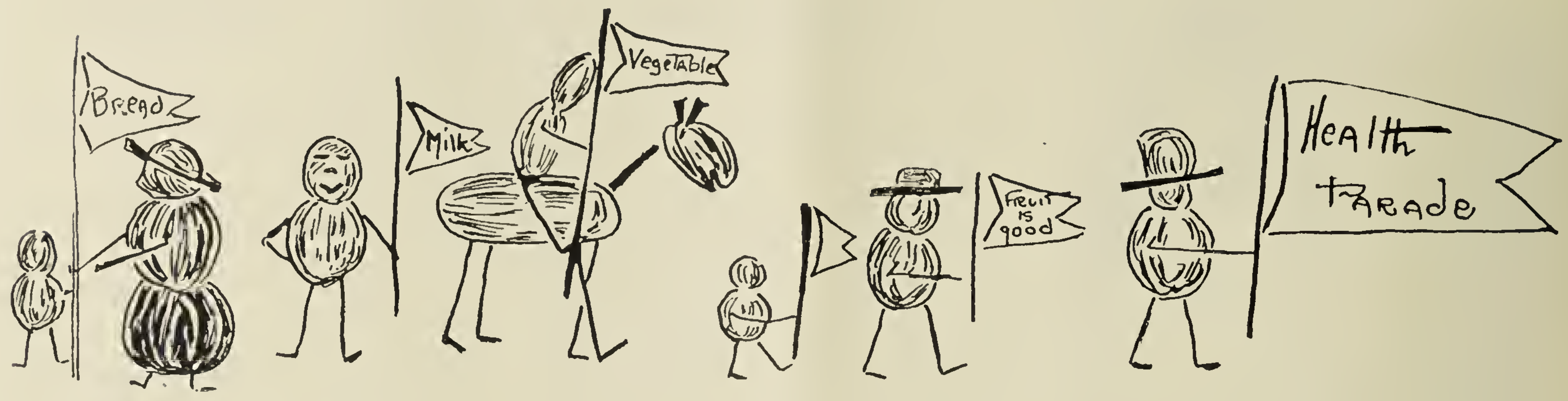
In this same year many of the young women who are preparing for social work elect the course in teaching the household arts, and as part of the requirement carry throughout the year the responsibility for teaching a group of young girls in some one of the settlements of the city. All of these students have had in the sophomore year one semester course in psychology and many have given an additional semester to a study of the development of children.

Special work in connection with the health classes at Lakeside Hospital is credited in this course to those who have completed the required number of hours of observation in the Cleveland public schools. They assist in the routine and clerical work of the classes, in the preparation and serving of food and in the study of individual children. They also visit children in their homes.

Those seniors who desire to prepare for special nutrition work and who possess the necessary personal qualifications spend nine hours a week for one semester as regular assistants in the Lakeside classes. They participate in all phases of the work, learning not only the technique of the class but also family and home conditions. They do this work under the immediate supervision of Agnes Schroeder, a home economics graduate of this college and a former home economist with the Cleveland Associated Charities.

The plan outlined has been in operation only two years, and we have not sent out any considerable number of graduates; but those who have completed the requirements were placed in good positions and we have had gratifying reports of the quality of their service.

S is for Sunshine and Sanitation too;
Without both these what would we do?



Fun in the Health Class

By EMMA B. MATTESON
Western Reserve University, Cleveland

FOR many years every child has probably known how

"Dr. Broder built a house
Forty stories high,
And every story in this house
Was full of chicken-pie,"

but children of today will tell you that to have every story in this house full of chicken-pie would not do at all, and that, instead, every story must have milk and eggs and fruit and vegetables and cereals. This knowledge has come about through the teaching of the importance of health and the various agencies by which a healthy body can be kept healthy or, if health must be acquired, some of the ways in which this may come about.

It is most interesting to discover the many and fascinating schemes employed in teaching these vital facts to children and I am glad to submit two ideas which have been worked out by college students and used in health classes of boys and girls of various ages.

The pen and ink drawings are representations of the manner in which dried fruits and cereals can be used for poster making. Dried prunes, apricots or other fruits can be strung on wires which easily bend to make arms and legs raised in gay dancing steps or, as in the parade, sedately marching in a health pageant. Rice, tapioca, oatmeal, spaghetti, become eyes, buttons, knives or hat decorations. The contrasting colors of the fruits are good and when the animals or figures are finished delight small children and interest the older ones. All sorts of games may be illustrated by the figures, and stories, especially fables, worked out with the animals. The fruit is attached to cardboard or to the inside of a paper box by heavy glue. The cover of the box adequately protects them from being brushed off when put away after class.

The following jingles have been used in health classes to the enlightenment and pleasure of both parents and children for they all know that "Little Tommy Tucker sings for his supper" and these children sing with Tommy's vim and vigor.

TIME FOR WORK

(Tune: Yankee Doodle)

Time for work and time for play
And time to go to school, boys,
But the time for work is every day.—
Now don't forget this rule, boys.
Time for work—etc.

CALL FOR YOUR CUP OF MILK

(Tune: Pack Up Your Troubles)

Call for your cup of milk,
'Twill make you strong and big and tall,
Rosy cheeks, bright eyes and vim—
Milk will furnish all.
Happy children now are we
And strong men later on;
So, call for your cup of milk
And drink it down,
And grow, grow, grow.

OH, GRAHAM BREAD

(Tune: Maryland My Maryland)

Oh, Graham bread; Oh, Graham bread,
You're very good for me, 'tis said;
You'll make my bones and muscles grow
You'll make me tall, I know it's so.
Your minerals so extra fine
Will keep me sturdy as the pine;
I'll tell my friends just what we say
And ask my mother for a slice each day.

HOW I LIKE TO EAT VEGETABLES

(Tune: Ach, Mine Lieber Augustine)

How I like to eat vegetables, spinach and cabbage.
How I like to eat turnip and carrot and beets.
I'll eat them, and eat them,
And eat them, and eat them;
And then I'll grow to be a strong, healthy man.

IF A LITTLE CHILD WOULD GROW

(Tune: Comin' Through the Rye)

If a little child would grow
Nice and tall and strong,
He must eat vegetables
As they come along.
In the spring eat peas and beans;
In the winter, beets;
But he must be awfully careful
Not too many sweets.

FOLKS OF THE HEALTH CLASS

(Tune: Solomon Levi)

Oh, we are the folks of the health class
And we always do what's right.
We eat the very best of food
And we go to bed early at night.
Now graham bread and whole wheat bread
Are far better for you and for me
Than white is because they have more vitamine B.
We're the folks of the health class,
Tra la la, etc.;
Yes, we're the health class,
Tra la la, etc.;
We scrub our teeth three times a day,
We wash our neck and ears,
And all the good results will total in the coming years.

Practical Work in Menu-Making

The minimum weekly grocery order on the following page was worked out by home economists in the Associated Charities and approved by local doctors interested in proper feeding. In order that the food materials might be properly apportioned throughout the week and that the meals served might be as appetizing and varied as possible, it was manifestly necessary that the mother of the family be furnished with some certain means of accomplishment.

With this thought in mind, the list has been given to some high school foods classes to work upon. Classes in dietetics are planning the menus and classes in cooking are testing out recipes and putting them into the simplest and clearest forms for reproduction. The results will be returned to the Associated Charities for distribution and use in case work. Such a problem furnishes many interesting starting points for further investigation and arouses interest as well in civic events.

Feeding Five

A suggested grocery order for one week for a family of five, consisting of man, woman, and three children under fourteen years of age. This order provides 85,000 calories a week and contains the food elements in proper proportion to cover the nutritional requirements of a family of this size.

Milk	29	qts.	@ .11	$3.19
Meat	5 to 7	lbs.	.14-.20	1.00
Fish				
Salt pork				
Beef				
Eggs	½ to 1	doz	.40-.80	.40
Cheese	1½	lbs.		
Cottage	1	lb.	.10	10
Yorkstate	½	lb.	.28	.14
Peanut Butter	½	lb.	.15	.075
Fats	2½	lbs.		
Oleo	2	lbs.	.23.	.46
Cooking fat	½	lb.	.15	075
Sugar	3½	lbs.	.08	.28
Flour	14	lbs.		.81
Allows for 11 lbs. of bread			.06	
Flour for cooking			.05	
Cereal	4	lbs.	.07	.28
Legumes	2	lbs.	.08	.16
Peas				
Beans				
Vegetables	24	lbs.		
Potatoes .... 15 lbs.			.015	.23
root and green...... 7 lbs.			.05	.35
carrots, cabbage, spinach, turnips, beets, onions, tomatoes—1 can, 2 lbs.			.15	.15
Fruit				
Dried	2	lbs.	.14-.18	.28
Apples	4½	lbs.	.04	.18
Oranges	6 to 8	lbs.	.36	.20
(Tomatoes can be substituted)				
Gelatine	1	box	.10	.10
Tea	¼	lb.		
Coffee	½	lb.	.25-.50	125
Seasonings				.05
		TOTAL		$ 8.64

Carrying Health to the Home

By AGNES H. SCHROEDER
Social Worker in the Food Clinic of Lakeside Dispensary, and
WILLIAM M. CHAMPION
Director of Pediatric Clinic, Lakeside Hospital, Cleveland

MALNUTRITION cannot always be entirely remedied by physical examination and medicine, but often necessitates in addition certain changes in daily life, hygiene and environment of the child. The making of these adjustments usually affects other members of the family, as a change in Tommy's diet usually means a change in father's diet as well, the family purse remaining inelastic. The cause of a child's malnutrition may apparently be wrong food and over-fatigue, but a careful home investigation will perhaps reveal an indulgent grandmother who wants company on frequent excursions to the picture show and thinks it cruel to deprive the child of candy and pop.

Elsie's mother, Mrs. Stewart, brought her to the dispensary because she was too thin. On becoming acquainted with Elsie's home life and habits, the nutrition workers learned that the entire family of five slept in one large bedroom and kept the gas stove going and the window closed. She learned also that though the family purse permitted almost any kind of food they desired, Elsie ate very little and usually only bread with a little milk or tea for breakfast and lunch. She had no nap in the afternoon and did not go to bed at night until she had been over-excited by romping with her father for an hour or two after supper. When Mrs. Stewart said that the children did not like cocoa, the nutrition worker suggested that they cook it together, and in this way the mother learned that she had been using wrong methods in cooking it.

At the meeting of the health class, Mrs. Stewart had been given a daily schedule to follow, stating the right kind of food to serve at the different meals and also making a provision for simple lunches between meals, afternoon rest, open windows and play out-of-doors. It was hard to persuade Mrs. Stewart to believe in these new ideas, so the worker took her, with Elsie, to visit a day nursery. There she was shown how the children were put to bed at a regular time each day, and left for and hour and a half or two hours with the windows open even though they did not go to sleep at once. She saw them eating creamed carrots, lettuce sandwiches, chocolate pudding and milk for their dinner, often asking for more than one helping. She felt that she had learned a great deal and said that she would like to use some of these ideas in her own home. On subsequent visits the worker helped her to do so. The change in Elsie has been remarkable.

This story illustrates the methods employed in conducting health classes at Lakeside Dispensary, which is one of the Community Fund organizations of Cleveland. There is also an affiliation with the Household Administration Department of Western Reserve University, which affords opportunities every semester for two or three students to assist in the health class and to do some field work under close supervision of the nutrition worker.

The pediatrist and the social worker together determine the methods to be used in actually conducting the health classes, and have frequent conferences during which they evaluate the progress which is being made, discussing definite plans for individual children. The principles generally observed in nutrition work, such as thorough physical examinations, correcting all physical defects, using weight charts, posters, and health talks, are employed at Lakeside Dispensary, with the addition of two very important factors, which differentiate its methods from those usually employed. These are (1) a greater emphasis on the teaching of diet and serving of food at the class meetings and (2) the case work approach to the problem of malnutrition.

The diet instruction aims to give the children a practical knowledge of nutritive values, and also to create a liking for the foods they need by permitting them to taste these foods properly prepared. About half of the health class periods are devoted to the lessons on food and the other half to other health habits. The food teaching is done through class discussion and demonstration. Amounts required are taught by setting a table with a breakfast, dinner and supper, yielding sufficient calories for one day for a child of a given age. This gives the children the concrete picture they need of the amount and kind of food to be served.

A cereal lesson is taught by showing samples of raw and ready-to-eat cereals, and the prices of each; for instance, cornmeal at five cents a pound and corn flakes at twenty-four cents a pound. The vegetable lesson is taught by having an exhibit of fresh vegetables, both raw and cooked in the various ways, creamed, baked, in soups, sandwiches and salads. The place of vegetables in the diet is brought out, and the children are encouraged to plant gardens in their own yards. After this lesson, spinach with bread and

Carlotta C. Greer

butter is served. After every lesson the children are given recipes for dishes served, and are encouraged to cook them at home.

The case work approach attempts to remedy malnutrition in an individual child by carefully analyzing the causes and carrying out the treatment which they suggest. The nutrition worker who has had home economics and case work training studies the entire environment of the child, including his home, school, and his outside activities. If there are other social agencies interested in him or in his family, they are consulted for information. Often the child's relatives, his church, or mothers of playmates must be seen to determine just what is the cause of his malnourishment. In the light of this information, a plan is made with the family. It may be necessary to teach one mother cooking, another marketing; another may need to buy a new bed or bedding. But always a program must be made for the entire day, beginning with an adequate breakfast and ending with after-supper activities and an early bedtime at night.

Through careful case work it is possible to deal with intimate and firmly established family habits which cannot be discussed in the health class, such as the atmosphere of the home, and the temper, intelligence, and habits of the father and mother and older brothers and sisters. All of these reflect on the health of the child and determine his cooperation with the health class. Often, advice is needed regarding education of other children, or the health, employment diet and recreation of the entire family. Subsequent home and school visits are needed to see that the plan is carried out and to remind and encourage the child and his parents.

The underlying principle on which the nutrition work at Lakeside Dispensary is based is that a child's health is intimately bound up with his entire life and cannot be treated as a separate phase. If the child is to be encouraged to eat something he thinks he does not like he must be helped in every possible way to overcome his natural disinclination to eat it. Since his living habits or activities cannot be readjusted without in some way affecting one or more members of his family group, the only way this adjustment can be made is through intimate personal contacts within the child's own home.

Teaching Wise Choice of Foods

By ADELAIDE LAURA VAN DUZER

Supervisor of Home Economics, Cleveland

IN the early days of teaching cooking—and it was literally that when it began—great attention was paid to habits of personal cleanliness and sanitary methods of dish-washing, but there were yet many things to learn.

We have come a long way since then both in knowledge and practice. Then, a roller towel hung against the kitchen wall in many a place, though a particular teacher had a clean one for every class. No one thought of forbidding the use of a common drinking glass, though here again the careful teacher admonished the child who failed to rinse it out before using. Now, the individual paper towel and the drinking fountain bear testimony to the spread of information regarding hygienic laws and their enforcement in our public schools. Educators have come to see that not only is it difficult to learn when physically below par, but that knowledge even when attained is worth little unless supplemented by a strong body and good health habits.

While a knowledge of food values and food combinations is only part of what is needed to bring about this desired state, it is a most important one and it is the contribution that the home economics teacher is best prepared to make. She has the requisite training and the interest accruing from complete grasp of any subject.

Unfortunately, school organization is often such that only part of the pupils are in the home economics classes, so she is unable to reach many of them. Boys, especially, whose food habits are undoubtedly no better than those of girls, are losers in this way.

Experience has taught that posters showing proper food combination together with their prices chosen from the day's menu are more effective if they are posted in the main corridor or just outside the door rather than in the lunchroom proper. This is probably due to the fact that when once in a rapidly moving line, the attention is directed to the counter rather than to the walls. Such posters should be attractive in appearance and the joint work of the art and home economics departments and they should be continuously displayed. In some lunchrooms, plate lunches sold at a slightly lower cost than the articles sold separately have helped create a taste for vegetables—a difficult task indeed.

Much can be done by the lunchroom manager in her wise choice of proper foods and arrangement of her counter. Substantials should always be shown before desserts.

When the lunchroom manager and the head of the foods work are one and the same, the task of influencing the student body by suggestion is of course easier since her classroom work will help her greatly. An ideal way would seem, at first, to have all lunches checked up as to their food value and revised to meet requirements; but on second thought, this seems doubtful. Would our modern youth consider such an act as curtailing personal liberty? Perhaps, in this as in other things, it is better to teach by example, guidance and precept rather than by compulsion.

A Week's Lunches for $1.00

Selected from the School Cafeteria
by Home Economics Pupils
in Glenville High School[1]

Monday	
Roast-beef sandwich	$ .10
Baked apple	.04
Milk	.03
Bar of chocolate	.05
	$ .22
Tuesday	
Spanish stew	$ .10
Cold Slaw	.05
Roll and butter	.02
Ice cream	.04
	$ .21
Wednesday	
Cream of potato soup	$ .04
Roll and butter	.02
Jellied peach salad	.10
Chocolate cake	.04
	$ .20
Thursday	
Macaroni and cheese	$ .05
Roll and butter	.02
Milk	.03
Stuffed pear salad	.10
	$ .20
Friday	
Salmon salad	$ .10
Roll and butter	.02
Fruit tapioca	.05
	$ .17

Prices of February, 1923.

Budgets and Better Health

By SARAH J. McLEOD
Director, Home Economics Bureau, Society for Savings, Cleveland

BUDGETS still have a hard row to hoe and unfortunately many home economics teachers approach the teaching of budget making and account keeping with little, if any, enthusiasm, because they themselves feel that budgets are not practical. They do not look upon them as constructive, and in too many cases they have neglected to practice what they are preaching—they are like the average American, they have made budgets, resolved to keep accounts, and within six weeks forgotten all about it.

Budgets and accounts can be made interesting if they are really kept and the actual figures are studied and used in a constructive way. Unfortunately in the past too much of our work has been theoretical because we lacked actual spending figures for the average middle class family. At the Society for Savings we have found that all divisions of the account sheet tell amazing tales, but the food budget is the phase I wish to mention here.

At the Society for Savings in making family budgets we make what seems to be an adequate food allowance and simply suggest that the housewife keep the food accounts under the four headings—meat, fish and eggs; cheese, milk and butter; groceries; vegetables and fruits—and at the end of the first month study the actual expenditures in relation to the following standards:

	Sherman per cent	Dept. of Agricul. per cent
Meat, fish and eggs....	19	20
Cheese, milk and butter.	45	20
Groceries	18	40
Vegetables and fruits..	18	20

The comparison of the actual figures with a standard brings home facts which could be impressed in no other way. In many cases, meat, fish, eggs and groceries run high, and cheese, milk, butter and vegetables and fruits are correspondingly low. Immediately questions of concrete ways of adding milk and vegetables to the diet arise, because there is a perfectly definite foundation on which to build and the expense record shows exactly where strength and emphasis are needed.

This winter the Home Economics Committee of the Cleveland Federation of Women's Clubs, under the leadership of Mrs. A. C. Morse, had the same experience we have had at the Society for Savings. A group of these women with no particular interest in budgeting were persuaded to keep family accounts. At the end of the first month the following actual percentages were presented by five housekeepers:

No. in family	8	4	4	4	2
Meat, fish and eggs	11.5	17	22	20	31
Cheese, milk, but'r	32	43	22	30.9	19
Groceries	31.5	20	15	36	26
Vegtbls. and fruits	23	19	41	12.9	24

These figures started the ball rolling, with the result that many more began to keep family accounts. Now there is a large group of women who are studying ways and means of improving their family dietaries simply because their accounts showed their deficiencies.

Budgets can never be interesting if they are offered simply as a list of figures. Budgets, to arouse enthusiasm, must be humanized and must be offered as a help—as a yardstick to measure the efficiency of one's spending—as a desirable goal to reach and never as an inflexible ruler. When budget making and account keeping are taught in the light of the individual's experience, whether man, woman or child, and the fact made clear that account keeping is only a means of reaching the goal set in the budget, and that the rewards are better balanced living and more happiness, then the budget will become interesting and vital.

Sarah J. McLeod

A Nutrition Week in High School

By CONSTANCE C. HART
Head of Home Economics Department, West Technical High School, Cleveland

NUTRITION WEEK as featured at West Technical High School was a week of general profit and interest to the whole school.

A nutrition class of underweight freshman girls, with their noticeable improvement after a few weeks of living up to health rules, decided those in charge of home economics classes to enlist the services of other school departments in making such a week an undertaking of benefit to the school at large. Beginning on the Friday before the parents were invited to an illustrated talk on nutrition in order that they might have an idea as to the general objective of the coming week's work; food and health posters made in the Art Department were hung throughout the building, not where they might, but where they must be read. The cooking classes displayed balanced meals daily in the library and halls. The school paper of the week previous ran right menus and articles on food contributed by the home economics department. The English department held a contest for the best themes on foods, the prizes given being two and a half dollar gold pieces for first prize, and cake made in the cooking department for the second. Strange to say, these last were both won by boys, which showed pretty conclusively some research on their parts. A "Better Nutrition" play was presented and greatly enjoyed. It was written by the English department, staged by the Art Department, and the costumes were made by the sewing classes.

Fresh fruits and green vegetables make pink cheeks.

On three days of this week, the luncheons selected by all the pupils

Interested in health work?

ANY teacher who is ambitious will want to take advantage of this special opportunity to get health and nutrition material free for use in her classes.

The Nutrition Department of the Borden Company, world's largest producer of milk products, has compiled and issued the most interesting health literature ever got out by any food company. All of this literature is at the disposal of teachers for use in schoo' work, entirely without cost to themselves.

The subject of malnutrition is engaging the attention of authorities everywhere. 6,000,000 children in the United States are undernourished. About one in three children in every class suffers from this unfortunate condition. Such children retard the whole class, spoil the record of the other pupils, and make a real problem for the teacher through no fault of their own.

Yet malnutrition can be overcome by establishing correct health and food habits.

What you can do

If you wish to begin health and nutrition work in your own school here are some suggestions. Write to the Nutrition Department of the Borden Company for advice. This department has observed over 500 malnourished school children during the past year and worked out a method of overcoming this menace.

The children were given health talks once a week; their homes were visited; they kept daily health records; and a special mid-morning feeding of Eagle Brand Condensed Milk was given to them. Eagle Brand is milk—just pure milk and sugar combined in a special way. With the addition of Eagle Brand to their regular daily diet, the underweight children gained remarkably in weight, in appearance, in mental keenness. They improved in their studies and in their behavior.

For Eagle Brand contributes vital elements which the growing body craves—proteins, vitamines, carbohydrates. It is exceptionally rich in the energy producing elements which are essential for work or play.

These same methods can be employed with any class. If you are interested in the needed data check off on the list below, the literature you would like sent to you, and mail the coupon today.

The Borden Company,
Borden Bldg., New York, N. Y.
Please send me the literature checked.
....20 Suggestive Lessons for Nutrition Classes
....An Interesting Experiment with Malnourished Children
....Keeping Your Child Fit
....The Adolescent Girl
....Menus for Little People
....Johnnie's Adventures with the Milkarpies
....The First Milkarpies
....Height and Weight Charts
....Health Records.

Name ________________________
Address

were checked as to their proper balance. Each day, on entering the cafeteria, the pupils were given a tag such as the one shown, with a printed slogan, different each day.

The filled luncheon trays were passed in review before members of the 11-A nutrition class and if on inspection a tray was found not to be all that it should be, the owner's tag was taken away and reasons given for so doing. Lunches brought from home were checked up in the same way. At the end of the week, everyone having three tags was given a certificate, stating that it was awarded by the West Technical High School in recognition of having well balanced luncheons during nutrition week.

This week gave an opportunity for stressing the importance of proper feeding and teaching of good food habits to others than those in foods and nutrition classes.

A Food Show by the Public Schools

THE advantage of bringing the public school work in foods before the general public can hardly be over-estimated. When the opportunity was offered to put on an exhibit in connection with a National Food Show, this program was carried out most successfully. A space approximately twenty feet square was fitted up with work tables covered with white enameled cloth, an iceless refrigerator, a glass covered show-case, a kitchen cabinet, and a gas range with a heat regulator attachment. As is always possible, local dealers were glad to put in this equipment merely for the sake of the advertising value of its presence in the booth. Colored posters from the National Child Health Association and other posters and food charts added a needed touch of color.

The several high schools were assigned afternoon and evening periods in which to show work consisting of exhibits designed to teach food values and combinations, and practical demonstration of cookery by the girls themselves in spotless caps and aprons—the second being almost necessary to attract attention to the first. Baked goods and marmalades made in the schools were sold to defray the expense of materials used in demonstration.

Two little girls from each of the junior high schools in spick and span uniforms mingled with the crowds distributing little cards of invitation, such as:

Home Economics Classes of
Cleveland Public Schools
We Learn to Cook for
HEALTH, SERVICE AND
EFFICIENCY
Visit our Exhibit
Printed at Empire Junior High School

The high school pupils spent their time in demonstrating.

The exhibits included the Use of Milk as Food, shown by charts, posters and cooked foods with milk as a basis; What to Carry for Lunch, showing lunches for various types of workers with different kinds of lunch boxes, charts and government bulletins; Balanced Tray Luncheons, selected from the school cafeteria with charts of classified foods and diets for types of people; The Spending of the Food Dollar, shown in actual properly balanced food together with a week's lunches that could be bought for a dollar in the school lunchroom; Food for Young Children, and The Right and Wrong Breakfast for a Child.

How to Dodge a Cold

By an 8B2 Class in Cleveland

Breathe fresh air both day and night,
If you don't, you won't feel right.
Don't wear your sweater or coat in school,
For that's against the Hygiene rule.
A bath each day below ninety degrees,
Will help keep you free from a winter disease.
Keep your digestion in good condition
And you will not need to consult a physician.
Avoid the person who has a cold
And the news of your sickness will not be told.
Keep your feet both warm and dry
Or you're liable to get pneumonia and die.
If you follow each and every rule
We'll have less absence
From Patrick Henry School.

Patrick Henry Acrostic

Hygiene 8B1-8B3 Classes

P is for purity, for which we all strive.
A is for fresh air, which keeps us alive.
T is for tooth brush, we use thrice a day,
R is for health rules, which we must obey.
I is for illness which we can control.
C is for cleanliness to reach the health goal.
K is for kitchen where germs must not stroll.

H is for health, we should try to obtain.
E is for effort—if we work, we will gain.
N is for neatness, in room and in hall,
R is for rubbish—don't let any fall,
Y is for you—please mind these rules all.

If you will cover that cough and sneeze
You'll save your friends from some disease.

THE ASSOCIATED CHARITIES

The Difference To You

You know that your food should nourish you as well as satisfv your appetite. Are you sure you are eating enough of the right kind?

Some foods are actually harmful, too, to children—and older folks as well. Have you learned how to avoid them?

Expensive foods are not more nourishing than cheaper ones. Cheap and wholsome foods will save you money.

Here are some that give you the most nourishment for what you spend—include them in your diet—

Milk, cheese, cheaper cuts of meat.
Potatoes, yellow turnips, carrots, tomatoes, cabbage, spinach, other greens.
Dried fruits.
Cereals, especially rolled oats, rice, cornmeal.
Molasses, cocoa.

Money Saving Menus

Here are suggestions for menus that will save you money and make for better health in your family—

Breakfast

Rolled Oats Prunes
Toast with Butter substitute
Milk (Coffee for adults)

Lunch

Potato soup
Bread with butter substitute
Oatmeal Cookies Cocoa

Dinner

Salmon and Pea Loaf
Baked potatoes Cabbage Slaw
Bread with Butter substitute
Tapioca Pudding Milk

Recipes You Can Use

Potato Soup

2 lbs. Potatoes
1 Onion
2 T Fat
2 cups milk
4 cups water
1 t Salt
2 T Flour
Pepper

Peel and cut up potatoes and onions and cook in water till very soft. Brown flour in fat and add enough potato water to make smooth paste. Add this and milk to potatoes and onions. Season to taste.

Salmon and Pea Loaf

1 can Salmon
½ cup Bread Crumbs
1 cup Dry Peas
1 t Onion Juice or Celery Seed
2 T fat
Salt

Soak peas and cook till soft. Mix salmon, breadcrumbs, cooked peas, fat and salt into a loaf. Bake in greased pan twenty minutes or till brown on top. Serve hot or cold.

Cabbage Slaw

1½ lbs. Cabbage (shredded)
1-3 cup Vinegar
1-3 cup Water
1 T Salt
1 T Sugar
Pepper

Sprinkle salt over shredded cabbage and let stand ½ hour. Mix together thoroughly vinegar, water, sugar and pepper and pour over cabbage. Serve cold.

Oatmeal Cookies

2 cups Rolled Oats
1 cup Flour
½ cup Sugar or
(4 T Brown Sugar)
Pinch of Salt
2 T Milk
2 T Water
4 T Fat
4 t Bk. Pd.

Mix oatmeal, flour, sugar, baking powder and salt together. Add melted fat and liquid. Drop on floured pan and bake about 10 minutes. ½ cup raisins may be added.

Tapioca Pudding

4 T Tapioca
1 Egg
2 cups Milk

Soak tapioca over night in cold water to cover. Drain, add boiling water and cook until transparent. Stir together with the milk, sugar and a well-beaten egg and cook in double boiler 15 minutes. Mix with tapioca and bake in a moderate oven from 20 minutes to ½ hour, being careful not to cook too much.

HOME ECONOMICS DEPARTMENT

Two pages from a leaflet showing a way in which the home economist of the Associated Charities helps to emphasize the relation between proper food and health. This idea could be advantageously used in school leaflets to be worked out in classes and distributed for home use

Material for Nutrition Group

At the request of a "nutrition worker" who felt the need of a wider background in dietetics, the following outline has been prepared. It is given in the hope of stimulating constructive discussion on the possible service to be rendered by the domestic science teacher to the nutrition worker.

General Plan

The material will be presented under two main heads:

1. Points to be made with children.
2. Material to be used as general background by teacher.

What Children Should Get from Work

The members of the group should have, at close of course, a clear idea of the following:

1. What good food habits are.
2. How to form these habits.
3. How to learn to like foods.
4. What happens as a result of good food habits.
5. What happens as result of bad food habits.
6. How to know when dietary is suited to individual needs. Why?

What Teacher Should Keep in Mind

The teacher of the nutrition group should keep in mind:

1. Subject matter to be given children.
2. General reading for herself.
3. Methods of getting message to children.
4. Tests of results achieved.

Good Food Habits

A child who has formed good food habits eats:

Do You Know that Royal Baking Powder is made from Cream of Tartar derived from grapes?

Make your next cake wholesome, healthful, delicious, by using

ROYAL Baking Powder

Absolutely Pure

NO ALUM

NO BITTER TASTE

The proper foods for his or her age,
In correct amounts, at each meal and during the day,
At proper hours, under right conditions.

Proper Foods for Children

Fruit juice or whole fruit, according to age,
Cereals, well cooked, with very little sugar and plenty of milk,
Whole meal bread, well baked or toasted,
One egg, coddled or soft cooked or poached.
One green vegetable,
Baked or mashed potato,
Small serving of meat.

The Wonderful Tonic

By MABEL M. ROSE
Teacher of Cooking, New York City Schools

MANY years ago in a far-away country there lived a little princess named Fleur-de-Lys. She lived in a wonderful palace and had everything she could wish for: toys, beautiful clothes, pets and dolls—such wonderful dolls! Her parents the King and Queen did everything they could to make her happy but she was always tired and only wanted to sit in the big drawing room with her favorite doll in her arms. The King consulted all the famous doctors from far and wide but still little Fleur-de-Lys languished.

One afternoon when the castle was very quiet and every one was asleep Fleur-de-Lys had an adventure. She looked out of the window and saw in the garden a funny little man dressed all in green with pointed green hat and a long feather. He beckoned to Fleur-de-Lys to come out. She tip-toed softly down the broad, shallow steps and joined the little dwarf, whose name was Maniken.

At the end of the garden walk they found two rough little ponies. Maniken put Fleur-de-Lys on one and jumped up on the other. Then away they rode over hill and dale. Fleur-de-Lys was frightened at first but afterwards rather enjoyed it. They finally stopped at a queer little cottage in the woods, all gables and pointed towers. Little dwarfs were busily working in the garden and in the woods near the cottage. Maniken told her that he had brought her to the dwarfs so that they could develop her into a strong, healthy little girl.

Just guess how the dwarfs did it.

First of all Fleur-de-Lys slept out in the big woods on a bed of soft pine needles. Then she had a bath in a big, shallow pool. After breakfast she played out-doors in the sunshine, jumped rope, ran races and played tag with the dwarfs. After dinner she rested, then worked in the garden or went for a ramble in the woods. When bedtime came Fleur-de-Lys fell asleep as soon as her head touched the pillow. Of course Fleur-de-Lys missed her parents but Maniken promised her that as soon as she was strong and well she should go home.

Meanwhile the King and Queen were frantic with grief, for they feared that their little daughter had been stolen away, and that they would never see her again.

One sunshiny day the King and Queen were seated in the garden feeling very sad. They saw a little girl coming toward them, running, skipping, dancing as she came across the grass. Behind her came a string of little dwarfs. Imagine the surprise and delight of the King and Queen when they realized that this happy, strong rosy-cheeked little girl was Fleur-de-Lys! How eagerly they listened while Fleur-de-Lys told them how the little dwarfs had made her strong and well! You may be sure the King and Queen rewarded them generously for their goodness to little Fleur-de-Lys.

The Wonderful Tonic

Exercise

Many years —— in a —— country there lived a little princess named Fleur de Lys. She lived in a —— —— and had everything she could —— ——: toys —— —— —— such wonderful dolls! Her parents, the King and Queen, did —— they could to make her —— but she was —— —— and only wanted —— —— in the big —— —— with her —— —— in her arms. The King consulted all the —— —— from far —— —— but still little —— —— languished.

One afternoon when the —— was very —— and every one was —— Fleur de Lys had an adventure. She looked out of —— —— and saw in —— —— a funny little —— dressed all in —— with a pointed —— —— and a long ——. He beckoned to —— to — ——. She tiptoed softly down —— —— —— steps and joined the —— ——, whose name was Maniken.

At the end of the garden —— they found —— —— little ponies. Maniken put —— on —— and jumped up —— —— ——. Then away they —— over —— and ——. Fleur de Lys was —— at first but afterwards rather —— ——. They finally —— at a —— —— —— all gables and —— ——. Little dwarfs were busily working in —— —— and in the —— near the cottage. Maniken told —— he had brought her to the —— so that they could —— her with a strong —— —— girl. Just guess how the —— did ——? First of all Fleur de Lys slept —— —— the —— —— on a bed of soft —— —— then she had —— —— in a big —— ——.

After breakfast she played —— in —— —— jumped —— ran —— and played tag with the little dwarfs. After dinner she ——, then —— —— —— —— —— or went —— —— —— in the woods. When bedtime came —— fell —— as soon as her head —— the pillow. Of course Fleur de Lys missed —— —— but Maniken —— her that as soon as she was —— and ——she should —— ——.

Meanwhile the King and Queen were —— —— —— for they feared that their —— —— had been —— —— and that they would —— see —— ——.

One sunshiny day the King and Queen were —— in the —— feeling —— —— when they saw —— —— girl coming toward them, running, ——, dancing —— —— came across the ——. Behind her came along —— of little dwarfs. Imagine the —— and —— of the King and Queen when they —— that this —— —— —— little girl was ——. How eagerly they —— while Fleur de Lys told them how the little —— had made her —— and ——! You may be —— the King and Queen —— them —— for their —— to —— ——.

The Vegetable Meeting

By KATHLEEN PUSAK

Mr. Pete Potato was on his way to town,
When he met Miss Betty Beet, in her bright red gown.
They stopped and both began to chat
Of what they did and this and that,
Till they decided that next week,
They would go and call on Mrs. Leek
To hold a little meeting there
Where all the neighbors could compare,
What each of them contains in wealth
That brings to human beings "Health."

The day came at last for them all to meet.
And each one took his appointed seat,
They talked till the room with noise they did fill
And Mr. Leek ordered them to be still,
As Mr. Potato couldn't be heard for the racket,
Standing there in his big brown jacket.
"I give plenty of starch," he began to boast,
"And I am the vegetable eaten the most;
I make the people fat and round but if they are able,
They should put some green vegetables too on the table."

The next to talk were some vegetables green,
Mrs. Leek, Sammy Spinach, and Mrs. Lima Bean;
"We contain a lot of good vitamines,
Which some folks do not know we have, it seems,
For sometimes we are cooked in such a way,
That all our vitamines are thrown away."
Then up came Mrs. Cabbage and Mrs. Celery, too,
And told us of the kind of work they were called to do
"For we contain a woody substance," said they,
"That keeps our enemy indigestion away."

The time was growing very late.
The clock said nearly five to eight.
So up they stood and with a cheer,
Sang this rhyme I've written here—
"Hurrah! We are the vegetables greeen!
In very home we want to be seen!
For we want to give our share of the wealth
That brings to children perfect health."
Then each one bid the other good night,
And all went to bed and snuggled in tight.

A Cereal Poster

C IS for Cereals
That for Breakfast we eat,
In Soups and in Puddings,
They're also a treat.

Showing how Gertrude M. Spitz has adapted the material of the American Child Health Association to the children at Boston Dispensary by the use of advertisements cut from newspapers and magazines.

From the Dietitian's Standpoint

KNOX SPARKLING GELATINE will furnish a large part of the necessary daily protein.

KNOX SPARKLING GELATINE dishes will convey the minerals and vitamines of fruits in a most appetizing way.

KNOX SPARKLING GELATINE makes variety easy in desserts, salads, soups, meat, fish and vegetables.

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SPARKLING
GELATINE

is always pure and safe.

Free gelatine will be given any Domestic Science Teacher for classroom work if she will write on school stationery stating quantity and when needed.

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containing hundreds of recipes for all kinds of delightful dishes will be sent on receipt of 4c postage.

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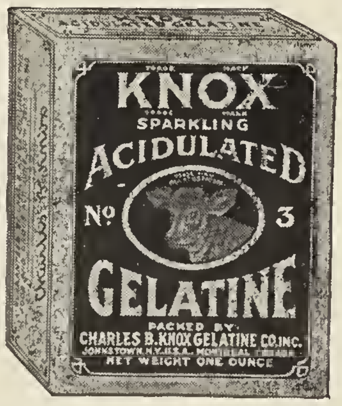
Plain for general use. The original unflavored, unsweetened package.



The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Mouth Hygiene
FOR
School Children
BY
Alfred S. Fones, D. D. S.

Director of the Division of Dental Hygiene, Board of Education, Bridgeport, Connecticut.

This book discusses the diet essentials in the building of firm, dense teeth. Dr. Fones believes that dental caries may be prevented by proper attention to the diet, and that school children may be taught to like foods that will make strong teeth and healthy bodies. He urges that children be taught to eat such natural sweets as figs, dates and raisins, real molasses, honey and pure maple syrup.

The most carefully selected food, however, will harm the teeth if allowed to remain on their surfaces. Dr. Fones tells how children may be taught to care for their teeth, and gives directions for a toothbrush drill for school classes. His booklet contains other material of great value to dietitians and home economics workers.

Handbook Series
Price twenty-five cents

Lakeside Publishing Co.
37 WEST 39TH STREET
NEW YORK CITY

Training for Nutrition Workers

THE Advisory Committee on Foods and Nutrition of the National Child Health Council has approved the following standards for the training of professional nutrition workers and for the special training in nutrition of general health workers who are to cooperate actively with physicians and nutrition specialists, or work under their direction.

1. As a preliminary to specialized training in nutrition, all candidates should have extensive and thorough training in the fundamental sciences, physics, chemistry and biology.

2. The special training of nutrition workers should include:

(a) The subjects that contribute to the science of nutrition, e.g., physical and chemical physiology.

(b) The subjects which help to make practical the science of nutrition, e.g., dietitics and household management.

(c) Experience which gives insight into the medical and social problems of nutrition work, e.g., practical work in a medical social service clinic, to include case work and record keeping.

3. In addition to these essentials, training along the following lines is desirable:

(a) A knowledge of social agencies and their correlation.

(b) Training in the principles of education.

(c) Practical sociology and economics.

(d) Supervised practice in the nutrition field.

(e) Training in bacteriology.

The training in nutrition to equip a general health worker for active cooperation in a nutrition program should therefore include educational work along the following lines:

1 Knowledge of life processes, gained through Elementary Biology (Equivalent to a high grade high school course at least).

2. Knowledge of the human body and its requirements gained through a study of Elementary Physiology, including the principles of human nutrition, and the relation of nutrition to growth.

3 Working knowledge of foods, as to their functions and the ways to make them acceptable and effective through cooking processes, gained through organized study of foods and food preparation: also knowledge of relative economy of foods from the nutritional standpoint, and of eating customs in the light of dietary requirements in order to prepare suitable diets for all sorts of people within a given budget.

4. Knowledge of the many and varied causes of malnutrition, including medical aspects, home atmosphere, general habits and behavior of child as to diet and other matters of hygiene.

5. Knowledge of the principles and technic of social case work.

6. Knowledge of the technic of imparting knowledge to others.

Copies of the report of the sub-committee on Training Standards from which this outline is taken, may be had by writing to "Mother and Child," 370 Seventh Avenue, New York City.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **'Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition articles on hygiene suitable for supplementary reading, etc.

3. **"Vitamins in Canned Foods."** A carefully prepared bulletin discussing the problems of processing as they affect the stability of the vitamines A, B and C.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5. **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their Importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a bananced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better with Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."**. A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for left-overs and plain desserts. A valuable pamphlet on the use of gelatine.

29. **"Bread and ——."** An illustrated booklet, describing the manufacture of oleomargarine, together with recipes and directions for preparing attractive dishes in which the product may be used.

30. **"One Dish Hot Meals For Rural Schools."** Carefully tested recipes prepared by the domestic science director of a large packing company.

31. **"A Six Weeks' Sequence In School Lunches, Suitable for Schools of 100 to 300 Pupils."** Well organized material on the development of a series of school lunches. Menus and recipes.

32. **"Educational Meat Charts."** Colored charts of convenient size, with a side of beef, lamb, etc., pictured entire, with the different cuts shown graphically, both singly and in relation to the animal.

33. **"Coffee From Tree to Cup."** A series of illustrated cards forming an educational exhibit. Price 50 cents.

34. **"Medal Cook Book."** A carefully prepared cook book, giving directions for all the standard cookery processes with special attention to those dishes requiring flour mixtures.

35. **"Height and Weight Tables For Boys and Girls."** Arranged from Dr. Woods' tables. Cards giving normal weights for both boys and girls. Published by Food and Health Education of The American Food Journal.

36. **"The Dietetic Advantage of a Digestible Cooking Fat."** A 2,000-word lesson paper prepared by an expert for a large food products company, with comparisons of various fats as to melting point, digestibility and food value. Good supplementary reading for the class room.

37. **"Meat Price Chart."** A standard-size wall chart, printed in colors. Shows graphically the various cuts of meat both in relation to the animal and separately. Brings out relation of supply to demand in fixing values. Graphic representation of dishes prepared from the different cuts.

38. **"About Canned Corn," "About Custard Pumpkin," "About Canned Peas."** Three booklets containing tested recipes and interesting facts on commercial canning processes. The recipes are so arranged as to fit conveniently into a standard-size recipe file. The information

INSTITUTION MANAGERS
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The summer months present many problems incident to the use of liquid

MILK

Souring from low barometer conditions or ice shortage—causes not only waste—but also incurs needless expense. Use

MERRELL-SOULE POWDERED MILK

which is the solids of fresh pasteurized cow's milk in powdered form. Simply place the powdered milk *on top* of cold water, heat for a few moments—and you have liquid milk of finest quality for either your culinary or beverage needs. You are doubtless familiar with KLIM—which is the retail name for Merrell-Soule Powdered Milk.

KLIM
(Whole or Skimmed)
1 lb.
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For further information write
The Director, Dept. of Dietetics and Cookery
MERRELL-SOULE CO., SYRACUSE, N. Y.

Powdered Milk
(Whole or Skimmed)
50 lb. Drums
85 lb. Drums
180 lb. Barrels

concerning canning processes is of value for class room instruction in food economics.

39. **"The Children's Party Book."** A twenty-five-page pamphlet, illustrated in color. Gives outlines of games for 10 holidays: Christmas, St. Patrick's Day, New Year's, etc., with suggestions for refreshments, recipes for fancy cakes, etc. Issued by the educational department of a large baking powder company.

40. **"Nationally Known Recipes,"** a fifty-page booklet showing how powdered milk may be used in soups, fish, sauces, salad dressings, breads, and candies. More than 30 organizations, manufacturers, educators and magazine editors cooperated in the making of the booklet.

41. **"To the Teacher."** Booklet showing how to visualize to classes facts about powdered milk. An educational wall chart showing process of manufacture of powdered milk will also be sent free to teachers.

42. **"Surprise Recipes."** A collection of recipes featuring powdered lemon juice (not lemon extract), printed in convenient form for use in a recipe-filing cabinet.

43. **"To the Teachers of Home Economics and Dietetics."** A booklet showing the place of powdered milk in bread making. Valuable information on government standards.

44. **"Lamb—Eat It Often."** A recipe booklet issued by a large packing house with many suggestions for preparation and serving of lamb.

45. **"Wheat and Flour Primer."** An illustrated pamphlet on wheat and flour manufacture issued by a large milling company. Suitable for supplementary reading in schools.

46. **"Cold Storage."** A leaflet issued by well known meat packers showing uses and economics of refrigeration.

47. **"Gems from Mammy's Southern Kitchen."** A pamphlet with 100 tested recipes, menus and food tables, featuring rolled oats.

48. **"The Story of the Bath."** A thirty-page pamphlet published at the suggestion of school superintendents, by a large soap manufacturing company. Of interest to teachers of food and health showing the relation of personal cleanliness to proper nutrition and bodily integrity.

Editor's note: Booklet Number 20, as listed in Food and Health Education for April, 1923, under the title "Bee Brand Manual of Cookery" is distributed at a cost of 50 cents per copy. We have been asked, however, to announce that the company publishing the book will be happy to make a special price for domestic science teachers of 25 cents per copy. The recipes include specialties of Southern cooks and have all been tested by a graduate of Columbia University.

MATERIAL PUBLISHED BY GOVERNMENTAL AND EDUCATIONAL ASSOCIATIONS

"Course of Study and Syllabus in Cooking." Helpful outline of course as adopted by the board of education and school superintendents of the City of New York. Of interest to all teachers of home economics in secondary and high schools.

"A Suggestive Budget for Families of Small Income." Very stimulating discussion of the problem of teaching the family budget. Prepared by the Home Economics Committee of the Associated Charities, Cleveland.

"The Campaign Against Malnutrition." Public Health Bulletin No. 134. Issued by the Treasury Department, United States Public Health Service. Informing discussion of all phases of the problem of undernourishment. Prepared by Advisory Committee on Foods and Nutrition of the National Child Health Council in cooperation with the United States Public Health Service.

"Mother and Child." A magazine devoted to the discussion of health problems in the home. Good supplementary reading and suggestions for teachers. Published by the American Child Health Association, 17th and F Streets, Washington, D. C.

"Health from the Garden." A fine article on the needs of the family in regard to vegetables. By Louise M. Murphy, R. N., State Extension Agent, State Agricultural College, Lincoln, Nebraska. Published in "The Public Health Nurse," April, 1923, p. 167. 2157 Euclid Avenue, Cleveland, Ohio.

"Home Economics Education." By Henrietta W. Calvin. Bulletin No. 6, Bureau of Education, Department of the Interior, Washington, D. C. Copies at 5 cents each, from Superintendent of Documents, Government Printing Office, Washington, D. C. A discussion of teaching problems that is invaluable for all teachers in secondary and junior high schools.

What Water is to the Parched Plant—

What the life-giving drops are to the drooping plant, Yeast is to Bread and Bread-dough.

It strengthens the inert mass, supplying life and vitality. It brings out all the goodness of the other ingredients.

For a richer Bread flavor, and the most nutritious loaf, use a liberal amount of

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FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Adviser. Dr. W. W. Skinner. Bureau of Chemistry, U. S. Dept. of Agriculture.

Use of Endo's Medium in Locating Milk Contamination

By LINWOOD A. BROWN and EDWIN J. GOTT

Department of Public Service Laboratories, Kentucky Agricultural Experiment Station

THE use of Endo's medium in locating the probable points of contamination in our opinion did more to make possible the production of a clean, decent milk supply in Kentucky than any other one factor. As the result of eleven years' experience with this method, we have no reason for changing our opinion of its value, as will be shown by data to be presented in this paper.

Method of Examination

Samples of milk intended for examination should be received at the laboratory packed in ice and at a temperature not in excess of 60 deg. C.

Preparation of media — Endo's medium is prepared, using the method given in Standard Methods for Water Analysis of the American Public Health Association, IV Edition.

For the B. coli count, one c. c. of a 1:100 dilution in sterile distilled water is plated with Endo's medium and incubated at 37.5 deg. C. for 18 to 24 hours. The plating is done in the same manner as that for obtaining the total count.

Organisms of the B. coli group produce surface colonies which have a typical metallic bronze sheen or luster. The sub-surface colonies are considerably smaller and of a deep red color. Occasionally subsurface colonies are observed which are of a red color, but extremely small or otherwise doubtful. It is our practice when such are observed to puncture the film directly above several of such colonies with a sterile platinum needle, and reincubate for several hours, when a reading and final count is made. If such colonies belong to the B. coli group, growth will spread to the surface along the line of puncture and with the production of the typical surface colonies.

It is impractical to count more than 1,000 colonies per plate on Endo's medium, owing to the depth of color produced on such plates. Milks containing more than 100,000 B. coli per c. c. are classed as filthy or dirty milks and no attempt is made to ascertain the exact number above this figure, as such information would be of little practical value and would not change the classification of the milk in any way.

It frequently happens that milks and especially unpasteurized ice creams contain such enormous numbers of the B. coli organisms that the plates are so overcrowded, that surface colonies fail to exhibit the typical characteristics; in these cases some of the doubtful colonies are streaked onto fresh Endo medium and incubated for confirmation.

The colonies appearing on Endo's medium which are counted may be roughly divided into two general classes. One class is a small, flat, non-coalescent colony, possessing a very distinct metallic bronze luster or sheen and considered typical of the coli section of the Colon Group. The other class consists of colonies that are generally larger, convex, having a tendency to coalesce when adjacent and possessing a sheen but not as decided or general as those of the first class. The second class is considered typical of the aerogenes section of the Colon Group. Although the same significance cannot be attached to both classes, nevertheless their presence represents an objectionable and needless contamination of milk intended for human consumption. Evidence now indicates that organisms of the aerogenes section have their chief source in soils and grains and are not found in fecal matter to the same extent as members of the coli section. It is now generally considered by investigators that Bacterium aerogenes is identical with Bacterium acidi lactici, sometimes termed Bacterium lactis aerogenes. This organism is entirely different from the Streptococcus lacticus, the organism responsible for the normal souring of milk. The members of the Colon Group, including the aerogenes section, possess the ability to ferment lactose with the production of lactic acid of low concentration and much gas, together with certain substances that impart an objectionable odor and flavor to the milk. On the other hand Streptococcus lacticus, the true lactic acid organism, ferments lactose with the production of a much greater concentration of lactic acid, no gas and absence of disagreeable odors and flavors.

This department has available records showing the results of bacteriological examinations made on nearly nine thousand samples of milk and other dairy products. The examinations cover a period of the last eleven years, and for the most part were made from milk submitted by inspectors serving in an official capacity. The results are divided into four groups on the basis of the total count obtained by using standard nutrient agar as the medium.

The four groups are as follows and were selected primarily because they represent, in our opinion, the four great classes of raw milk, namely certified, and three classes of market milk—good, poor and filthy.

Group I consists of samples with a total count of 10,000 and less.

Group II consists of samples with a total count of 10,000 to 100,000.

Group III consists of samples with a total count of 100,000 to 1,000,000.

Group IV consists of samples with a total count of 1,000,000 and over.

Each group was again subdivided as to the presence or absence of B. coli.

As is to be expected, the percentage of milks showing B. coli is lowest in Group I, and increases in almost direct proportion as the total count increases, as shown in the following three groups, reaching the highest, 96 per cent, in Group IV. In Group I, consisting of milks with a total count of 10,000 or less, 8.4 per cent of the number of samples contained B. coli, indicating objectionable contamination, which would not be revealed by the total count alone. Out of a total of 2,350 samples comprising Group II, which would be considered good market milks, over 35 per cent showed the presence of B. coli. Group III, consisting of samples having a total count of 100,000 to 1,000,000 and falling within our classification as "poor market milks" has over 27 per cent without B. coli, which really represent a cleaner grade of milk than the 35 per cent containing B. coli in Group II.

In Group IV we still have 4 per cent of the samples showing no B. coli. This condition is believed to be due to an initially clean milk having been subjected to incubating conditions producing a high total count, sufficient to place these samples within the grade of filthy milks when the total count is the sole basis of classification. These milks, regardless of the extremely high count, may still be clean, wholesome milks, produced under sanitary conditions. Proper icing would have prevented such high count.

Of the 8,610 samples examined, 45 per cent were given a negative B. coli score regardless of the total count.

It will be remembered, as stated in the early part of this paper, that the B. coli count is obtained by plating 1 c. c. of a 1 to 100 dilution with Endo's medium. When the enumeration of B. coli was begun by this department eleven years ago, a lower dilution was used, but it was soon found to be impractical and a dilution of 1 to 100 was decided upon as the one which would give us the best practical insight into conditions under which the milk was produced and handled.

This enumeration of the B. coli group gains its greatest importance from the fact that a division of dairies that use relatively good dairy practices and those that consistently use poor dairy practices can be made. After the suspicious dairies are identified by this method, these may be then singled out to receive more frequent inspection by the inspectional force, which should result in an improvement of conditions and practices over those previously used by these dairies. It was learned after a few years that it was not impractical for a dairyman to produce milk with no B. coli in a 1 c. c. of a dilution of 1 to 100. It was a goal that could be attained by any dairyman, as evidenced by the 45 per cent of samples with no B. coli count. A great many of the remaining 55 per cent showing B. coli had a low B. coli count —less than 1,000 per c. c.

This laboratory is undertaking a special investigation which has for its purpose the differentiation of the members of the B. coli group as isolated from the Endo plates of milk examination, into the coli section, considered of fecal origin, and the aerogonas section, generally held to be of non-fecal origin. This investigation, although not complete, is encouraging us to maintain the opinion which we have always held: i. e., that the great majority of colonies appearing on the Endo plates are of fecal origin. Ayers and Clemmer of the Bureau of Animal Industry found that B. coli far exceeds B. aerogones in numbers when occurring in milk.

The opinion is quite commonly held that it is impossible for a dairyman, even those producing certified milk, to produce milk free from members of the B. coli group. . . . During the last few months we have been conducting some experiments to possibly enlighten us concerning this contention.

In the early part of the work, 5 to 10 c. c. portions of every sample of milk received at the Laboratory were transferred to sterile tubes and incubated at 37½ deg. C. for 18 to 24 hours. The incubated portion of those samples showing no B. coli in the routine examination were then selected for plating with Endo medium. This was done to see if the original samples were entirely free from B. coli or if they contained such small numbers as would be missed in the quantity used for the routine examination, advantage being taken of the ideal conditions for development of members of the Colon Group so that if only a few organisms were present, these would develop sufficiently to be detected. Out of eighty-seven of such selected portions, we again obtained a negative B. coli plate in thirty-one instances, or 35 per cent.

Extending this line of investigation farther, we incubated pints of milk in original bottles at 37½ deg. C. for 24 hours. These samples were obtained from two different dairies, one of which was the Experiment Station Dairy. These dairies were selected because of their known ability to produce milk of a high grade. These pint samples were taken each day from the daily output as delivered to the consumer.

The B. coli determination was made as usual, both before and after incubation. Out of twenty-four such samples, not one showed the presence of B. coli before incubation; eighteen gave negative results after incubation and the remaining six showed the presence of B. coli after incubation in number from 200 to 200,000 per c. c.

Those samples giving a negative B. coli count after 24 hours incubation, eventually produced a curd which was soft, entirely free of gas bubbles, and having a delicious flavor and aroma. This type of curd is characteristic of one produced by a pure culture of Streptococcus lacticus. We have come to look upon this type of fermentation as the "normal" one brought about by Streptococcus lacticus, in contrast to the "usual" lactic acid fermentation produced by Streptococcus lacticus in conjunction with members of the B. coli group. Such mixed fermentation invariably produces a curd that is characterized by more or less hardness and the presence of gas bubbles, associated oftentimes with an objectionable odor and flavor.

When a B. coli enumeration is obtained from any milk sample, it is an indication that the dairyman is not using the best of dairy methods...

To this extent a B. coli enumeration is desirable in raising the standard of milk production and in obtaining a better idea of conditions as they existed at the time the milk or other dairy product was produced.

A high total count associated with a high B. coli count is indicative of careless or dirty conditions in or about the dairy or subsequent lack of sufficient cooling, thus permitting incubation of the initial contamination. A low total count and a small number of B. coli indicates an initial contamination which has not been allowed to develop, due to either insufficient time or thorough icing.

A low total count with no B. coli indicates a good, clean product, produced under sanitary conditions, by dairymen using good dairy methods and possessed with the desire to produce a high-grade product.

The bacteriological classification of milk based entirely upon the total count is inadequate. A B. coli count is absolutely essential and should be made a part of the bacteriological standard and of equal importance with the total count.

We would suggest that the bacteriological standard for certified milk be a total count of 10,000 bacteria or less per c. c. and to show no B. coli, using 1 c. c. of a dilution of 1 to 10 with Endo's medium. For raw market milk, we suggest a standard of 100,000 bacteria or less per c. c. as the total count and no B. coli, using 1 c. c. of a dilution of 1 to 100 with Endo's medium.

Conclusions

Milk does not necessarily contain B. coli and can be produced free from such contamination.

Endo's medium makes possible the detection of B. coli, an indication of objectionable contamination. Such needless contamination is an index of conditions existing at the dairy or plant producing the product.

The knowledge obtained by this test should enable the enforcement official to educate the dairymen in his community as to the proper means of producing clean milk.

The use of this test enables the Food or Dairy official oftentimes to point out the source of objectionable contamination, and is of great value in court work in substantiating the claim that certain samples are filthy and unfit for human consumption.

Owing to the possibilities of recontamination of dairy products as may be shown by this test, it is of great value in controlling the efficiency of the pasteurization or of the methods used in such plants and in judging the quality of the milk furnished such pasteurization plants.

Excerpt from a paper read before the seventh annual convention of the Central States Food, Feed and Drug Officials' Association, Louisville, May 1-4.

Uniformity of Factory Inspection

By W. C. GEAGLEY

State Analyst, Michigan Department of Agriculture

MAY I venture the opinion that there is no such thing as "uniformity of factory inspection"—that there never will be—any more than there will be a "uniform food law"?

If I may be permitted to digress from the subject a moment, in comparison: A uniform food law is an ideal which was planned for before the national food law was passed in 1906. Since that time many, if not all, of the states have passed legislation, codified law, issued regulations and promulgated standards regulating, restricting and controlling food establishments until—well, is there any wonder that farmer, producer, manufacturer, dealer and even food enforcing officials have clamored for uniformity? When I speak of "food establishments" I mean the term in its broadest sense, which includes drugs, dairy products, stock feeds and many other products coming within the scope of the Foods and Drugs Act, from raw material to finished product. Considerable time has been spent by committees of the various associations, national and state, especially in recent years, to the end that a uniform food law be adopted. This we all agree is ideal, would create a perfect state of affairs, and be advantageous to manufacturers, dealers and food officials.

The Problems Involved

When we consider the many types of products which naturally come within the scope of the food laws, the different territories and localities where they are produced and the peculiar questions encountered in their transportation, handling and marketing, it does not require a stretch of the imagination to appreciate that we are confronted with a tremendous problem, that of uniformity—a problem of such extent and magnitude that the officials who have been engaged in food control work for a considerable length of time realize that a "uniform food law" is practically an impossibility unless one shall be obtained which is very limited in its scope and touches only a few common products with which we are all concerned.

Also, working against the passage of a "uniform food law" is the body politic itself and the functioning of legislative bodies. The influences at work in our legislative makeups in the states which are directly concerned in proposed laws and regulations are some of the outstanding obstacles.

If I am correct in reading the signs of the time, I may say that a uniform food law is practically a dead issue and has been largely given up as an impossibility.

There is one obtainable feature, however, which has been outstanding in all the deliberations which have been given to the question of uniformity and that is "uniformity in regulation and procedure." This, to my mind, is especially applicable to the subject of uniformity of factory inspection.

When we pause to consider the many different types of factories or establishments engaged in the production and handling of the products with which we are concerned, and, too, thinking for a moment of their character which is more or less determined by the raw material and the locality in which they are located, it can be readily seen that a set uniform factory inspection, difficult of attainment, will never accomplish what we hope for it. But by following a uniform method of procedure, definite information and results may be obtained which will be of value and will allow for any variation from a given standard type of production, handling or manufacture.

Types of Inspection Required

In speaking of types of factory inspection I have in mind the many places of an entirely different character, different ideals and different people, which are involved in the problems with which we have to deal. One has only to think of the many special laws covering different subjects in any given state or city to appreciate the innumerable establishments which lawfully come under the heading "factory inspection" and this reaches out from any point until it covers the entire length and breadth of the country.

We, however, are directly concerned with and responsible for only those establishments located within our jurisdiction. We are, or should be, interested in establishments of every locality which produce an article coming within the scope of the laws and regulations with which we are charged, and which is distributed within the confines of our Commonwealth. This naturally limits "uniformity" to this extent—that Michigan officials are not particularly concerned, as officials, with the type of factory inspection carried out in Maine, Florida or California, on products which are never sold or distributed in Michigan, nor with which they ever, in any manner come in contact. Neither are those localities interested in the type of factory inspection of Michigan establishments which put out articles that are produced, distributed and consumed at home. At least, in so far as our particular problems are concerned.

Possibly some are interested from the standpoint of science alone.

Before going into some of the details of uniformity of factory inspection, permit me to remind you of the work of the Bureau of Chemistry in pioneering factory inspection. This question has been given considerable thought and study in some of our recent meetings, and the details and purposes of factory inspection have been covered so fully we need not repeat them here. I refer particularly to a paper presented by a member of the Bureau of Chemistry at the meeting of the Central States' Officials in Detroit last fall.

Relation of Inspection to Law Enforcement

The purposes of factory inspections are manyfold, and, when it is carried on in an intelligent manner, form one of the most important links in food law enforcement and regulation. They are probably the most correct guide that can be obtained in the practices of any given establishment. They deal with concrete facts which in many instances may not be obtained in any other manner and in all cases the information and facts developed by an intelligent factory inspection correlate other regulatory measures, particularly laboratory procedure and analysis, in a manner which can be accomplished in no other way.

At the outset, a properly conducted system of factory inspections should be the determining factor for regulatory work; undoubtedly regulatory measures based on knowledge obtained by factory inspections will do more to correct evils and encourage and foster growing industries than all of the promulgations, edicts, hearings and various other types of official red tape issued from an office on hearsay or one-man ideas of an industry.

The times are such at present that business generally looks with disfavor on food officials and food regulations of any character which are not sound in principle, constructive, practical, and based on reason. And, in all cases where due consideration is given the industry, not as criminals but on the whole as a class of intelligent, law abiding citizenry, the most hearty and active cooperation is obtained and beneficial and lasting results invariably follow.

With a state of feeling existing among manufacturers and producers of food products that food officials generally are not trying to "put something over," merely looking for technicalities, or that personal notoriety of any food official is not desirable, little, if any, difficulty is experienced by those officials in reasonable law enforcement and regulation. When the opposite is true, we have indeed a chaotic condition between manufacturers and food officials. This generally disgusts the public at large which is not in a position to know facts and details as they should be known—and there is no practical way of informing it—and it takes, rightfully, an indifferent attitude. Truly, this has a far reaching effect. We are all familiar with work of any character that is treated in an indifferent manner; little or no good is accomplished and the time and money spent are wasted.

Odvantage of Constructive Inspection

Constructive factory inspection aids business generally because it works from the simple to the complex and any procedure based on this theory is bound to arrive at a correct understanding and the solution of perplexing problems. Our main difficulty in the past has been that food officials generally have started with the complex and worked backward to the simple.

Factory inspection has another advantage in that it is possible at times to work both ways; namely, from the complex to the simple and vice versa. This is distinctly to the advantage of the chemist in the laboratory who is concerned primarily with the finished product, as well as the correlating of facts determined by a field investigator for the guidance of executive officers. It is generally admitted that an interpretation of results for the judgment of any industry may only be accurately had by a thorough-going, comprehensive history or factory inspection of the business; an intelligent study of the practices in which the manufacturer is engaged, from the raw material to the finished product. In fact, I am not so sure but that the majority of enforcing officials today are depending more or less upon this information.

I am not aware of a single instance either in government, state or city, where food regulations are in force, where the enforcing officer does not have in mind and is working to, the development of factory inspection, and by so doing, the official is serving the public, as a public official should serve.

Granting, then, that this is true it follows that the best methods and facilities at our command should be taken advantage of and used. The old saying that it is best to "fight fire with fire" is rapidly going into the discard and many of us are prone to think that "an ounce of prevention" is worth more, at any time, than "a pound of cure"; and that "more flies may be caught with honey than with gall." . . .

You probably all recall a comparison which was made by the Bureau of Chemistry not so long ago, on the value of food products and the food industry as a whole, in which it was stated there were approximately sixty-seven thousand, five hundred establishments turning out food products valued at thirteen and one-quarter billions of dollars annually. The iron and steel industry is next in order in the valuation of products, with a total of two billion, eight hundred and twelve millions of dollars; and the totals of the automobile industry, boots and shoes, clothing, foundry and machine products, iron and steel, together, do not equal the value of the products of the manufactured food industry.

It is plainly apparent that a business reaching such a valuation requires innumerable types of manufacturing establishments, processes, as well as methods of handling and marketing.

This, to my mind, indicates that the seriousness and value of factory inspection is a real problem and unless approached with some degree of reasonableness will ultimately result in much harm.

Fortunately we have engaged in the food industries many broad minded people who, in spite of city, state and government officials, have progressed and developed given lines to a high state of perfection. In fact there are many such industries which are much in advance of regulatory work. Factory inspection must be developed to an equally high state of perfection or the investigator is a laughing stock and his efforts made light of. What is true with the highly developed industry is soon taken up and followed by the smaller manufacturer who does not have the financial backing or the ability to develop his business to equally as high a standard and who really needs encouragement and advice. Here, again, will the investigator—who is the food enforcing official—not be given serious consideration.

A Service to the Manufacturer

It is of the utmost importance **that factory inspection be carried out primarily** as an aid to the development of the industry and that technical violations of food laws be mere incidentals. The industry itself should be educated to the point where it understands that food officials, in their work, are actually striving to benefit them and find ways of overcoming faulty practices, to make helpful suggestions and serve those engaged in the food industry who require and need such help.

As to the actual details of factory inspection, it is not for me to say what is best or should be taken into consideration. Generally, when we have in mind the factory inspection of any given establishment, an investigation will be made, and a report written which one who did not do the work may read to acquire an accurate idea, or a mental picture, of that particular establishment.

From a food official's standpoint, this need not be an annual or semi-annual occurrence. Businesses usually are fixed establishments, with a definite line of products, and only minor changes are made during the life of that business. Once a complete inspection is made, future inspections are additions or deletions only, indicating the changes to the original, and when considered in connection with the original make available a complete history of an establishment. Progress may be easily summarized in any one, as well as a class, of food establishments and the effectiveness and ability of food officials may be accurately determined by reviewing factory inspections.

Uniform Procedure

I should like to repeat the suggestion made at a former meeting, that the pioneers of the food industry, namely the Bureau of Chemistry, take the initiative in working out uniform factory inspections—that is, uniform procedure; that this be followed by the states and cities and the information which is generally required for any class of establishment decided upon; and that a uniform report blank and reporting be used, with interchangeable features.

In explanation of this last, take in the case of Michigan where food products subject to regulation are received from Indiana, Ohio, and any of the bordering states, which appear to be in violation of state or federal regulation, or statute, in so far as composition and quality of the food itself are concerned. Usually those who attempt inspection and analytical work could accomplish more and decide a question justly and equitably if they had before them a comprehensive factory inspection of the establishment where that product was manufactured, with data which would give accurately the source of the raw materials used, commercial practices, and any seasonable variation which might have a bearing upon the question. With this information, any enforcing officer, either in Michigan or in any other state, could intelligently decide a course of action which would be fair and reasonable. The same thing may be said with reference to products produced or manufactured in Michigan and shipped into other states. Where any product was questionable, Michigan, by having in force a factory inspection system, would be in a position to explain and assist those outside the state in questions which might arise in their locality and undoubtedly many problems would be adjusted on a more equitable basis without jeopardizing any company or individual. This, possibly, would relieve the Bureau of Chemistry of a mass of factory inspection work which they feel must be done, and which they do, enabling them to devote more time and effort in developing problems which the states cannot do and for which the Bureau, having in their employ trained scientists, are ably equipped, and not restricted as are the states.

Excerpt from a paper read before the seventh annual convention of the Central States Food, Feed and Drug Officials' Association, Louisville, May 1-4.

DIGESTS FROM FOOD MAGAZINES

Causes of Bacteria in Bottled Beverages

IN the laboratories of Iowa State College, a few years ago, samples of bottled beverages sold in Ames and Des Moines, Iowa, or sent in by manufacturers, were examined to determine the purity of these beverages as compared with the city drinking water. The findings are reported in the April issue of "The American Bottler," by Dr. Max Levine, associate professor of bacteriology at the college.

"Of sixty-nine samples," says Dr. Levine, "12 per cent contained over 100,000 bacteria per cubic centimeter. Among nineteen samples of ginger ale 31 per cent, and of twenty-one samples of mineral water, 33 per cent had over 100,000 bacteria per cubic centimeter. Furthermore, in 9 per cent of the mineral waters intestinal bacteria were also present. With the exception of the mineral waters, which were not Iowa products, there were no intestinal bacteria present. The large number of organisms found are therefore not necessarily an indication of danger from the disease transmission viewpoint, but they are extremely important as an indication of the fact that the products were probably not produced under the best sanitary conditions. These products were on the verge of deterioration, if not already spoiled."

These bacteria may have been present in the water used for the beverage; they may have been introduced with the sirup; inadequately and improperly cleaned bottles or unclean rinsing water may have been used. Dr. Levine makes some suggestions for eliminating the dangers from these causes, and thereby preventing or at least minimizing spoilage and deterioration, which are particularly applicable to bottling:

"(1) The plant itself should be maintained in a clean, sanitary condition. When we speak of a clean, sanitary condition we mean more than sweeping up the floor occasionally and dusting off a window sill. The individuals themselves must be clean in their habits. Facilities and provisions should beb made for washing the hands, etc.

"(2) Particular emphasis may be put on the desirability of sterilization of bottles. This question needs study and investigation to ascertain the methods which will best be applicable to the peculiar conditions encountered in your industry. You have no idea with what the bottle has come in contact between the time it leaves your factory and the time it gets back to you. The practice of drinking pop from the bottle, though not now as common as in the past, is still frequently in vogue. Obviously, the bacteria in the sputum of the consumer are left on the mouth of the bottle. Mere rinsing is not sufficient to remove these objectionable forms. Sterilization must be resorted to.

"(3) It stands without further argument that only clean, pure water should be employed not only for the body of the beverage, but for washing and rinsing the bottles as well. You will find it to your financial advantage to see to it that the city water supply, if you are employing such a supply, is above reproach. If you are so unfortunately situated that you have available only a polluted water it becomes necessary to purify it. Fortunately, this does not involve exorbitant expenditures.

"(4) The problem of prevention of spoilage is to a great extent one of sanitation and it is for you to develop a sanitary code for your own industry. A well organized, sanitary service under the direction of your national or state organization would not only reduce materially your losses due to deterioration, but it would be an excellent advertisement and an assurance to the public that you are providing them with a clean, safe and wholesome product.

"(5) The difficulties which you are encountering are not peculiar of and restricted to your industry. Other manufacturers of liquid beverages have met and solved similar problems. Spoilage in wine and beer has been practically entirely eliminated by the method of pasteurization, introduced about seventy-five years ago by Pasteur. Pasteurization has also been found valuable in the milk industry. It not only eliminates the danger of transmission of intestinal diseases, but increases the keeping qualities of the pasteurized beverage. Pasteurization is a process which the beverage industry may well look into. The exact methods and details to be employed (it may even be necessary to devise special types of bottles) can, of course, be worked out only through careful experimentation, but I believe that it can be successfully employed in your industry. With the adequate organization, such as you are developing, and through co-operation with research chemical and bacteriological investigators you should be able to solve and eliminate the defects, shortcomings and avoidable losses from which you now suffer."

Essentials in Dehydration

PROCESSING, humidity, circulation and temperatude for dehydration are discussed by H. D. Morgan in an article in "Canning Age" for May, the second of a series on that subject. One of the principal points emphasized by Mr. Morgan is that the finished product cannot be better than the raw material, and for that reason the selection and grading of products before processing is of vital importance. To be a success, he points out, dehydrated products must not attempt to compete with green market garden produce, but with canned foods, which require no preparing. If dried vegetables are cooked in a kettle of cold water, started slowly and allowed fifteen minutes to reach the boiling point, then with a little salt added boiled for five or ten minutes longer, the result should be entirely satisfactory.

Humidity and temperature Mr. Morgan calls the "Gold Dust Twins" of dehydration, and like the original twins, they require vigorous movement. Humidity prevents case hardening, skin drying, checking and overdrying. To gauge humidity in the dry kiln he suggests the following "mirror text":

"Take a mirror into your kiln and immediately there is a fog on its surface. Note how dense it is, whether larger globules or just a fog. If very fine, rather dust-like condensation, your commodity is less than 25 per cent. If fog-like, the humidity will run up to 45 or 50 per cent. If in globules or drops condensation will be near 75 per cent. But if the globules immediately run down, the face of the mirror indicates a relative humidity up to 90 or 95 per cent."

Eliminating the Fishy Odor in Butter

RECENT experiments in the dairy department of the University of Wisconsin indicate that fishy odor in butter, which has frequently been the cause of large losses to the trade, is not the effect of dirtiness, bacteria, contamination or exposure to fishy odors, but is caused by the chemical decomposition of the lecithin in the milk. M. C. Johnstone, in an article written for "Hoard's Dairyman," reprinted in a recent issue of "The Dairy Record," states that lecithin, which is a variable quantity in milk, being present more abundantly in the milk of cows just freshened, when the temperature and other conditions are right combines with the air, forming choline. Choline then decomposes, one of the products being trimethylamine, which is directly the cause of fishy odor.

There are two methods, according to the article, by which fishiness can be prevented. One is by oxidizing the lecithin of the cream to such an extent that the little left in the butter will not be enough to contaminate even though it turn to trimethylamine. The other is by preventing the oxidation of the lecithin after the butter is made.

"There is only one method by which the lecithin can be oxidized in the cream. This is by pasteurization. When the cream is pasteurized for thirty minutes at 145 degrees, it is agitated a great deal so that much of it comes in contact with the air. Thus the lecithin and air, with the aid of the heat, oxidize and pass off. After pasteurization so little remains that any fishy odor will be masked by other odors. The flash method of pasteurization had little effect upon fishiness.

"The acidity of the cream, the tinning of the utensils, the salting and the working of the butter, and the storage, all affect the possibility of odor after the butter is made, since all act as oxidizing agents.

"Where butter is to be made for storage, only fresh, sweet, unfermented cream should be used if it is possible to get it in this condition. Since the cream frequently comes in acid it is necessary to neutralize it. It is also best to grade it and churn the different grades separately. The cream should be neutralized after pasteurizing since the acid present will help to oxidize the lecithin. After pasteurization the cream should be neutralized to 0.25 per cent acidity and churned without starter. If, for some reason, starter must be used, add it just before churning.

"Copper and iron in the butter, even in very small amounts, are sufficient to cause fishiness. They act as catalysts and aid in the process of oxidation. The cure for the copper is good tinning, since tin does not act as a catalyst. All vats, cans, forewarmers, pasteurizers, coolers, etc., should be well protected with tin. The acid in the cream is able to eat off enough copper to taint the butter. Iron may be present in the water used to wash the butter. All water should be tested and if iron is present some means should be found to eliminate it, since there will be enough present to do damage.

"Salt has two effects upon the odor. It helps to produce it, and after it is produced makes a new compound which is also fishy and which can not be got rid of. The salt draws the lecithin from the butter grains so that they can unite with the air incorporated in the butter and remaining between the grains. If sweet butter could be put into storage this difficulty would be eliminated. Since that is impossible, as little salt as possible should be used. Where it is possible the brine method of salting should be used. For some reason it does not have as bad an effect as does the dry salting.

"Overworking has much the same effect as salting. In this case the butter grains are broken and so the lecithin is exposed to the incorporated air.

"Temperature and length of storage also have a great effect upon fishiness, since it often does not appear until several months after making. For the most part these things are out of the buttermaker's hands. All he can do is to keep the butter at the creamery at as low a temperature as economical and ship to cold storage as soon as possible. Butter should not be held in cold storage more than eight months, and while there should be kept at a temperature of ten degrees Fahrenheit. After being released from cold storage the merchant and housewife should keep it as cold as possible at all times. The more often it is exposed to room temperature the more chance there is of the odor developing."

Asparagus Canning in California

IN an article on the culture and canning of asparagus in the April "Canning Age," W. V. Cruess and A. W. Christie, of the Fruit Products Laboratory of the University of California, describe the process of preserving this vegetable as it is carried on in the canneries located in the asparagus region of California, where approximately a million cases a year are turned out.

Success in the canning, they point out, depends upon speed, since asparagus undergoes very rapid metabolic changes when held in boxes more than a few hours, developing a strong flavor and becoming tough. The delivery and canning should be planned so that no more than six to ten hours elapse from field to can. However, canneries should have ventilated and water cooled storage rooms, where in emergencies asparagus may be stored for twenty-four hours without deterioration.

The asparagus is graded by experienced women according to color, quality and size. Usually seven or eight separations are made, although the number may reach eleven. Each grade is placed in a small wooden box, holding some three pounds. Graders receive nine cents for a box of forty-eight pounds net, averaging four boxes an hour. Speedy workers may grade six or seven boxes an hour.

The large number of size grades, doubled by separation into green and white stalks and further complicated by the different sizes of can used, results in a very large number of grades. In one cannery warehouse there were thirty-six separate and distinct grades of asparagus.

The small boxes used by the graders are so dimensioned that when the stalks are placed with the tips inside the butts protrude from the open side at such a length that when the boxes pass under the circular asparagus cutting knives, the stalks are cut to the proper lengths for the can for which intended. These small boxes are transported to and from the grading and cutting tables by endless conveyors. A small amount of the largest spears are hand peeled with guarded knives and packed for very fine hotel and cafe trade.

After cutting, the asparagus is emptied according to grades into wicker baskets holding from thirty-five to forty pounds and blanched in vats of boiling water according to the age of the stalks, the average time being about three minutes. Blanching is followed by washing and chilling under cold water sprays. The asparagus is then taken to the canning table sinks, where the fillers wash and fill the stalks into the cans and give them the final inspection and grading. Square tins are becoming popular because of the injury to the tender stalks when shipped in round cans. The vacuum produced within the square can after cooling draws in the four sides and holds the spears firmly so that they cannot roll or rub as in the round can where only the ends are drawn in.

In the briner a hot brine of 2 or 3 per cent salt is placed in the cans. Specially designed automatic sealers are required to seal the square cans, each machine having a capacity of fifty cans a minute.

In sterilization small square horizontal retorts are commonly used. The sealed cans are collected in iron trays, loaded on trucks and rolled into the retorts. The standard temperature of sterilization is 232 deg. to 233 deg. F., and the time varies from 25 to 35 minutes according to the size of the cans. The retorts are equipped with recording thermometers and great care is taken to give just the proper process.

At the end of the process the steam is turned off and the retort filled with cold water while the internal pressure of the hot cans is equalized by compressed air admitted to the retorts at the same time.

The trays of cans are next stacked on a cool ventilated porch for twenty-four hours, before being stacked in the warehouse. Very little spoilage is encountered in the canned asparagus but if not sufficiently and promptly cooled after processing or if stored in a warm place it may occur because of the development of thermophilic bacteria which survive the temperature of sterilization but cannot develop at normal storage temperatures.

After each can has been tested for soundness, the cans are labelled and boxed by hand.

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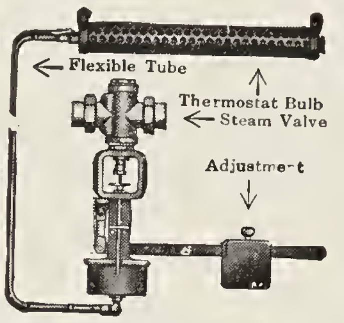

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Wholesale Grocers Meet in Two Conventions

National Body in St. Louis and Southern Group in Washington Hold Record-Breaking Assemblages

Editor's Note: Believing that our readers will be interested in a summary of the more important features at the recent convention of the National Wholesale Grocers' Convention, held in St. Louis, May 15-18, and at that of the American Wholesale Grocers' Convention in Washington, May 22-25, we offer a condensed story of the two meetings, giving some of the main points, the officers elected and brief excerpts from some of the addresses and committee reports.

Convention of the National Association

PROBABLY the most significant feature of the St. Louis convention was the resolution adopted after a warm discussion of "the long campaign of exploitation" which the majority of the members feel has been carried on unjustly by political trade users and theoretical reformers, to paint the grocer as a profiteer and an enemy of public economy. This resolution reads:

"We urge upon all wholesale grocers the vital necessity of taking most aggressive and constructive action to correct misstatements and misrepresentations of various kinds in the public press or otherwise regarding this great industry, so vital to the people of the United States, and to combat unfair attacks made upon our business and upon other important branches of America's greatest industries.

"The National Wholesale Grocers' Association pledges itself through its membership and an appropriate committee, or committees thereof, to render this important service to the wholesale grocer and to the public, in order that the truth regarding our functions and service may be known and understood by the public whom we serve.

"And we declare that in justice to ourselves and to the merchants and consumers dependent upon us we will use our best efforts to bring before State and Federal governmental departments the vital importance and the common justice of investigating more thoroughly before making public complaints against merchants, so many of which complaints have been proved unfounded and have been dismissed by the State or Federal governments themselves through their various departments."

The late administration was very generally elected for the coming year, with only one change in the vice-presidencies and minor changes in the directorate. The following officers were chosen:

President, J. W. Herscher, Jr., Charleston, W. Va.

Vice-Presidents, O. J. Moore, of Sioux City, Iowa; Austin L. Baker, of Boston; B. D. Crane, of Fayetteville, Ark.; Royal L. Davidson, of Indianapolis, Ind.

Treasurer, Sylvan L. Stix, of New York City.

It is expected that the secretary and the assistant to the president, M. L. Toulme and John B. Newman, will also receive reappointments.

The following excerpts have been taken from some of the leading addresses and reports given at the convention. Reports of much interest were also made by the Discount for Cash Committee, the Canners' Conference Committee, the Better Containers' Committee, the Canned Foods Week Committee, the Fire Prevention Committee, the Postal Service Committee, the Department of Commerce Simplification Conference Committee, and the Federal Trade Commission Committee.

From the President's Address

SOME may call it luck that we are still in harness and going strong. I call it pluck. Even those who cry out about the middleman wholesaler have, in spite of themselves, had many demonstrations of the usefulness of the functions performed, and the low cost of the service charges. No better system that more exactly fits the American scheme has been devised or can be suggested.

"We serve and survive because strong, vigorous men engaged in competitive merchandising of the world's most vital necessity, food, felt the need of, and organized seventeen years ago, the National Wholesale Grocers' Association, in the firm belief that intelligent, friendly association and adherence to fair and ethical business practices, is in public interest. We have honestly and fearlessly carried out the objects of the association, which are:

" 'First—to foster and promote a feeling of fellowship and good will among its members and on broad and equitable lines to advance the welfare of the wholesale grocery trade of the United States;

" 'Second—To oppose improper methods and illegitimate practices inimical to the right conduct of business that honest and open competition may prevail;

" 'Third—To promote harmonious relations among manufacturers, wholesalers and retailers in order that food products may be placed in the hands of consumers at the lowest possible cost;

" 'Fourth—To assist in the enactment and enforcement of federal and state pure food laws that in their operation shall deal justly with the rights of consumers and the trade, and of effective weights and measures statutes for the protection of the public;

" 'Fifth—To promote the adoption and enforcement throughout the United States of uniform laws upon commercial subjects;

" 'Sixth—To disseminate useful information and maintain high standards of education among members with respect to the scientific and practical features of their business;

" 'Seventh—To have business conducted upon lawful and proper lines, and to correct evils, including 'schemes,' 'deals.' 'lotteries,' 'premiums' and the subsidizing of jobbers salesmen;

" 'Provided, that in the efforts of the association to accomplish these ends, no action shall be taken that will tend in any manner whatsoever to fix or regulate prices or in any way operate in restraint of trade.' "

From the Secretary's Report

THE entire operation of the great national organization of the wholesale grocers swings around three outstanding policies. They are:

1. Be Honest.
2. Be Fair.
3. Be Thorough.

"Being honest means being sincere." It means doing exactly what is represented as being done. It means having a conscience: not issuing blank notes, promising anything and suggesting everything. It means mature thinking and mature acting. It means a scrupulous meeting of obligations that have been undertaken. It means being big enough to admit limitations.

"Being fair means sitting down, gathering around the table with allied trades and the government and thinking out differences of opinions. It means giving the other fellow credit for being honest, sincere and intelligent. It means a gracious admission that wholesalers are not the only honest men in business. It means conceding that the other fellow has rights and that his viewpoint is worthy of consideration. It means that bulldozing, sensational recriminations and reckless charges are taboo. It means being reasonable.

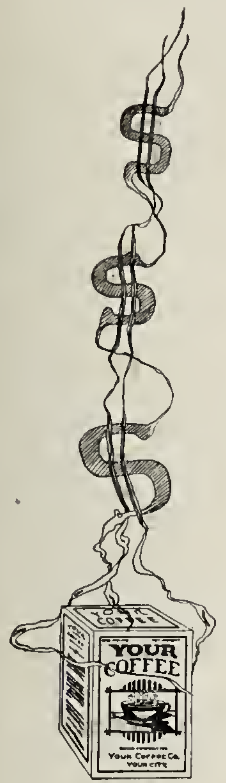
"Being thorough means being a finisher as well as being a starter. It means intelligent, sustained, grinding effort. It means not being afraid of the long, hard pull, with every ounce of steam on, until the hill is climbed. It means cold, hard, actual achievement. It means results, not promises. It means that outstanding promises are outstanding contracts. It means tackling the job, wrestling with the job and overwhelming the job. It means taking as seriously as one's own business, the work assigned as a volunteer."

From the Report of Counsel

YOU are organized in the legitimate interest of the wholesale grocer and of those who as manufacturers, dealers or consumers, have to do with the great problem of food, and you cannot, as an association, in a particular field, appropriately assume to correct all the social and political evils of the day. But surely the simple question of respect for the law and authority that we ourselves as citizens have enacted and set up is the concern of every man and woman and every educational, political or trade organization in America.

"And it happens that you are most vitally concerned, because you purchase and store the sinews of peace and of war. You possess food in great quantities. That is part of your service. In any time of stress you are inevitably a storm centre. Always when laws have been broken on a large scale and order has given way to riot, the food shops and warehouses have suffered the heaviest onslaught.

"Each of you, both in and out of your Association, can strongly aid in the correction of present conditions. There is a solution: More intimate and personal respect for authority in home and state, fewer laws and more observance."



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From the Report of Membership Committee

YOUR membership committee has added fifty-six new members to your association's records during the year just closed, securing this new membership in twenty-four states."

From the Report of Arbitration Committee

FORTY-SIX arbitrations have taken place; 28 were decided in favor of the buyer; 18 in favor of the seller; 36 were on canned foods; 5 on dried fruits; 1 was on rice; 4 were on various articles.

"The experience of your arbitration committee during the past few years has clearly shown that many merchants do not carefully read their contracts before accepting and signing the same. It is on this point that it seems to us a word of caution may be necessary, for it is very clear in our minds that a contract carefully written by well-intentioned parties rarely results in a misunderstanding or a controversy that would call for the services of a committee on arbitration. Be sure your contract contains an arbitration clause that is workable and satisfactory to you; something like this is suggested:

" 'Should a dispute arise regarding this contract, which cannot be settled by conference between buyer and seller, it is agreed to submit same for settlement to the Arbitration Committee of the National Wholesale Grocers' Association of the United States, and the National Food Brokers' Association, endorsed by the National Canners' Association.'

"Agreements entered into by carelessly spoken words and loosely-written letters are as dangerous as other ambiguous contracts. Remember when a contract is ready for execution it is intended as a record of the meeting of minds, and that all should have the same understanding of the terms and conditions. To this end every precaution should be taken, otherwise the germs of a dispute exist from the signing of the contract."

From the Report of the Jobbers' Efficiency Committee

WE of the Jobbers' Efficiency Committee are of the opinion that the work in connection with Harvard University has been of the greatest assistance to individual wholesale grocers and to the trade as a whole. Those of us who have been close to the affairs of the National Wholesale Grocers' Association know that Harvard figures have been used from time to time with fatal effects upon rumors and charges that are being constantly lodged against the food industries by those who do not know the facts, as well as by those who do not want to know the facts. The Harvard figures completely take care of such situations."

From the Committee on Foreign Trade Relations

WHEN making shipments to foreign countries, it should be borne in mind that price alone is not the deciding factor. Service counts for considerable. The proper making of documents, promptness with shipments, adequate packing and distinct marking, all have much bearing on the success of the enterprise.

"The question naturally arises, 'How are we to get foreign trade?' The answer is that you must go after it. You do not secure your local trade by mere correspondence, and the same applies to trade at a distance. The liberal distribution of catalogues may be the means of getting some business, but nothing succeeds quite so well as personal contact.

"The situation as presented today indicates reasonable assurance that foreign trade can be safely conducted. We must not look for normal conditions for many years to come, consequently, we should select for our operations such sections as give evidence of earliest recovery. Analyze carefully the various countries of Europe. You will find that considerable volume is transacted annually with England and the Netherlands, China and Japan are slowly recovering from the effects of speculation during 1919. Exchange at that time was at its highest, and with the tremendous fall a year later, the merchants found themselves confronted with a situation heretofore unparalleled in history. We are pleased to report a gradually improving situation."

From the Federal Trade Commission Committee

UPON a review of the reports and cases published by the commission, it occurs to your committee to suggest that better results might be obtained for all concerned if the commission should make it a practice to investigate much more thoroughly before issuing and publishing its initial complaint in a case. This practice would result in lower costs for the conduct of the commission's own work, since the commission itself, as well as the courts, frequently dismisses complaints. Secondly, a far greater proportion of the commission's cases would then succeed and the commission would more thoroughly attain the results it desires in different fields of industry for the protection not only of the public, but of the manufacturers and merchants everywhere who honestly desire to observe the law and who now frequently suffer from unfair methods of competition pursued by the unscrupulous. Thirdly, the commission would thus issue comparatively few, if any, public complaints against those who are innocent. As the dismissal, both by the commission and by the courts, of numerous complaints issued by the commission since its organization has emphatically established, many wholly innocent associations, corporations, partnerships and individuals have, by the issuance of these complaints, been published to their fellow-citizens as law-makers."

From the General Education Committee

THE General Education Committee of the National Wholesale Grocers' Association works under an assignment phrased as follows: 'The diffusion of information to the public concerning the Association and wholesale grocer; investigation and instruction regarding business methods, economy services and need of wholesalers and retailers; publication of the monthly Bulletin; study of retailers' problems; diffusion of helpful information.'

"Shortly after the opening of the association's fiscal year, wholesale grocers will recall that the Joint Commission of Agricultural Inquiry, representing the sixty-seventh Congress made public its report on 'Distribution and Marketing,' which is now known as Volume IV of the Commission's Report. The National Wholesale Grocers' Association has a double interest in this remarkable work. In the first place, the federal government invited the National Wholesale Grocers' Association to assist actively in gathering the data necessary for this report. The association responded and a special committee that was appointed to represent the association performed work that received the hearty commendations of the federal authorities.

"In addition to this, the government, for the first time, we believe, set forth an exhaustive and accurate statement, tracing food products from production to consumption. A contribution of this type coming from the source it did and handled in the scientific, unbiased manner in which it was, was something that such merchants as are represented in this Association have been most anxious to see for many years past.

"The General Education Committee of the National Wholesale Grocers' Association adopted every method that could be thought of to get this report before the consuming public. . . Our committee analyzed the report and placed in the hands of wholesale grocers in every section of the country two analytical articles for local re-publication. It was encouraging to note that many progressive wholesale grocers actually did cooperate with the committee by bringing about the publication of the articles in their local newspapers.

"The report of the Joint Commission of Agricultural Inquiry has not yet been given the fullest publicity. Certainly every wholesale grocer and every retail grocer in the United States should see to it that a copy of this volume is at hand, because, as time passes, reference to it will furnish facts with which to combat and quash charges that are sure to be made in the future, as they have been made in the past, regarding the necessary costs of food distribution.

"The publication of 'The Bulletin,' which is published monthly by the National Wholesale Grocers' Association, also represents an important function of this committee's duties. We have made strenuous efforts to interest food merchants generally, not only as readers of 'The Bulletin' but as contributing editors. We believe that an actual survey of the issues of the past year will show that we have not only merited the attention of the readers, interested in food distribution, but that we have secured splendid assistance, especially from those in our own ranks, in the presentation of interesting articles about the wholesale grocery business. . .

"No intelligent wholesale grocer can fail to be interested in the welfare of the retail grocer, and the General Education Committee has endeavored to be of assistance in every way. Our field is national, and because of the fundamental differences that exist in various sections of the country and in various markets, it has been generally recognized that the General Education Committee could only gather the most practical suggestions and offer them for such local use as seemed advisable. In a series of circulars, 'Helps for Retailers,' we have endeavored to present some worth-while ideas."

Convention of the American Association

J. H. McLAURIN was once more elected president of the American Wholesale Grocers' Association, with a strikingly unanimous vote of confidence and appreciation of his accomplishments in building up the organization since his first appointment to that position several years ago. Other officers elected were:

First vice-president, Guy V. Lewis, Cincinnati, Ohio.

Second vice-president, J. M. Radford, Abilene, Tex.

Third vice-president, Alger Flowler, Seattle, Wash.

Fourth vice-president, J. C. Felsenthal, Memphis, Tenn.

Fifth vice-president, Hiram T. Gates, Richmond, Va.

Sixth vice-president, H. T. Clark, Aurora, Ill.

Treasurer, John D. Baker, Jacksonville, Fla.

One of the principal resolutions adopted by the convention had to do with the filing of complaints by the Federal Trade Commission and reads as follows:

"Whereas, The Federal Trade Commission functions practically only in a negative way; and

"Whereas, Complaints are frequently filed against individuals who have violated no law, but who are injured by the publicity given such complaints;

"Whereas, It is desirable that all businesses should be conducted in such a way as to be most efficient and as will most benefit the public;

"Whereas, If the Federal Trade Commission should be given authority to and should function as an advisory body it will benefit all people engaged in business;

"Therefore, be it Resolved by the American Wholesale Grocers' Association in meeting assembled, That it is recommended that the Federal Trade Commission act be so amended as to authorize that commission on its own motion to file general investigations for the determination of the propriety and fairness of business practices, that such investigations should be filed with reference to the practice and not against the individual, and that on such investigations the commission be authorized to enter an order expressing its findings as to the propriety and fairness of the practices investigated.

"Be it further Resolved, That complaints should not be filed against individuals charging unfair practices unless and until there shall first have been an investigation as to the practices and such practices found unlawful.

"Be it further Resolved by said association, That it here now tenders its services and cooperation to the Federal Trade Commission, to the Secretary of Commerce and to the Secretary of Agriculture, and to all other governmental agencies, in an effort to arrive at efficient, economic and proper business practices."

Excerpts from some of the principal addresses follow:

From the President's Address

DO not stand here this morning to advocate any measure whereby in anywise to curtail or stifle honest, legitimate competition in buying and selling either at retail or wholesale, but I do want it understood that I advocate a cessation wherever that exists of wild, insane, jungle competition among men, resulting wholly from the efforts of one man in business to act without due regard to personal or public consequences. You know and I know that such competition as that is destructive of the moral fiber of men, subversive of the highest welfare of the public and leads only to final discouragement, failure and defeat.

"If we are to maintain the dignity of our business and maintain a full sense of our obligation to the consumers of this country we are going to study very carefully to know the cost of our merchandise that we may be enabled to sell that merchandise intelligently and at a price that is fair to our stockholders, to our retail merchants, that their confidence in us be not betrayed.

"I think it timely to emphasize the importance of a proper recognition of the cash discount terms allowed by manufacturers. Your organization recognizes the fact that discount terms acceptable to a wholesale grocer at the time of purchase should be no less acceptable to him at the time of payment. Needless for me to remind you that no merchant can reasonably claim the right to deduct a discount for cash in eleven days when the terms prescribed by the contract are for ten days.

"The practice of a manufacturer paying a bonus to a jobber's salesmen, the practice of free goods and other like pernicious practices in the trade will be discussed by the proper committees. I take this occasion to say to you that I believe that, following the action of this convention, there will cease to exist in the United States a manufacturer who will have

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the hardihood to offer a bonus in any form to the salesmen of a wholesale grocer."

In later issues of The American Food Journal under The Conference Table, various points in Mr. McLaurin's address will be brought up for further discussion.

From Secretary Hoover's Address

WE have come to appreciate a new value in trade associations. There may be some acts which may seem contrary to the public welfare but the great majority of associations and their work are distinctly helpful and in the public interest. Anti-trust laws were never framed to defeat the ends for which such associations are striving.

"The country has now had many years' experience with these acts; they have received constant interpretation by the courts, and the working results in our economic fabric in some directions are out of tune with our economic development.

"No one would contend that there be relaxation in the restraints against undue capital combinations, monopoly, price fixing, domination, unfair practices and the whole category of collective action damaging to public interest.

"There has been, however, a profound growth of understanding of the need and possibilities of cooperative action in business that is in the interest of public welfare. Some parts of these cooperative efforts are inhibited by law today, but, of much wider result, many are stifled out of fear or shackled from uncertainty of the law.

"At the time the Sherman Act was passed the country was in the throes of growing consolidations of capital. These were consolidations of actual ownership, and the country was alive with deserved complaint of domination in business, in attempts to crush competitors with unfair practices and destructive competition. Collective action in its sense of benefit to public interest was much less known and, at any rate, was probably not contemplated as coming within the meaning of the act.

"In any event, there is a wide difference between the whole social conception of capital combinations against public interest and cooperative action between individuals which may be profoundly in the public interest. The former extinguishes individualism through domination; the latter greatly advances it and protects it.

"Cooperative action has, however, struggled for development through the growth of chambers of commerce, trade associations and conferences of one kind and another in an effort to meet various sorts of crises, to improve business standards and to eliminate waste in production and distribution.

"It is true that some minority of such activities has been used as a cloak for action against public interest, but it is also true that a vast amount of action in public interest has been lost and even great national calamities brought upon us by lack of cooperative action.

"Where the objectives of cooperation are to eliminate waste in production and distribution, to increase education as to better methods of business, to expand research in processes of production, to take collective action, in policing business ethics, to maintain standards of quality, to secure adequate representation of problems, to prevent unemployment, to supply information equally to members and to the public upon which better judgment may be formulated in the conduct of business, then these activities are working in public interest.

"There are some twenty-odd different functions of cooperative action which are at the same time in the interest of the different trades and the community at large.

"Any collective activity can be used as a cloak for conspiracy against public interest, as can any meeting of men engaged in business, but it does not follow because bricks have been used for murder that we should prohibit bricks. There is, moreover, a very wide differentiation between cooperative action open to an entire trade or region of a trade and capital combinations, because the former may be dissolved instantly without any disturbance of capital or production and does not represent increasing domination of a group of individuals in a trade, but the democratic development of a whole industry.

"Without entering upon debate as to the difficulties of such a course, it is possible to consider a narrower field of liberalization of law; that is, for the law to be liberalized to the extent that cooperative organizations generally, as distinguished from capital consolidations, should be permitted to file with some appropriate governmental agency the plan of their operations, the functions they proposed to carry on and the objectives they proposed to reach; that upon approval such of these functions as did not apparently contravene public interest might be proceeded against.

"All who know the situation in such matters will realize that the problems of cooperative action are mainly the concern of the smaller businesses. Such a measure as that suggested above would serve actually to protect small business and thus to maintain competition. Big business takes care of itself. Legitimate trade associations and other forms of business cooperation would be greatly stimulated along lines of public welfare if such a plan were adopted."

Cornelius Soule Sweetland Dies

Cornelius Soule Sweetland, president of the Rumford Chemical Works, Providence, R. I., died on May 30 in his seventy-eighth year. Mr. Sweetland was nationally known in financial circles, particularly through his connection with the now defunct Providence Banking Company and the Union Trust Company of that city. When the latter closed its doors in the financial panic of 1907 he was appointed as one of the receivers and later became a vice-president of the institution.

Provision Merchants in Bombay

Forward & Company, of Marina Mansions, Chowpatty, Bombay, announce that they are interested in supplying provisions, fresh foodstuffs and general marine stores to steamship companies, and are open to appointment as sole purveyors on annual contracts. The firm has been doing business for a number of years as ship chandlers, commission agents and contractors.

M Katz, for many years vice-president of the Acme Baking Company, is now associated with the J. S. Hoffman Company, of Chicago, as general sales manager.

Flavoring Extract Manufacturers Hold Convention

The fourteenth annual convention of the Flavoring Extract Manufacturers' Association of the United States will be held in Cincinnati, June 27, 28 and 29 at the Hotel Sinton. Arrangements are in the hands of the convention committee of which Robert E. Heekin, of the Heekin Company, Cincinnati, is chairman.

Recent Patents

The following patents of interest to readers of this journal have recently been issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trademark attorney, Continental Trust Building, Washington, D. C., at the rate of twenty cents each. State number of patent and name of inventor when ordering.

1,449,102. Process for the manufacture of compressed yeast and the product. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,103. Process for the manufacture of compressed yeast. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,104. Process for the manufacture of compressed yeast. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,105. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,106. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,107. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,108. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,109. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,110. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,111. Process for the manufacture of yeast. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,112. Low-alcohol yeast process. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,113. Method for the precipitation and preparation of compressed yeast. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,114. Foam-destroying device. Friedrich Hayduck, Wilmersdorf, Germany, assignor to Fleischmann Co., New York.

1,449,127. Process for producing yeast. Martin Nilsson and Norman S. Harrison, Peekskill, N. Y., assignor to Fleischmann Co., New York.

1,449,134. Method of treating molasses. Alfred Wohl, Danzig-Langfuhr, assignor to Fleischmann Co., New York.

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What the California Fruit Products Industries Have Accomplished

Cooperative Marketing Methods Proved Successful Through Efforts of Western Growers and Packers

By C. E. WRIGHT

IN California four large groups of fruit growers and packers have organized and developed with astonishing results during the last thirty years. Most of this progress, in fact, has been made within the space of a decade. Fruit growers as well as other producers and manufacturers throughout the country have watched the growth of these huge organizations with interest, and other states may profit from a study of some of their experiences and struggles.

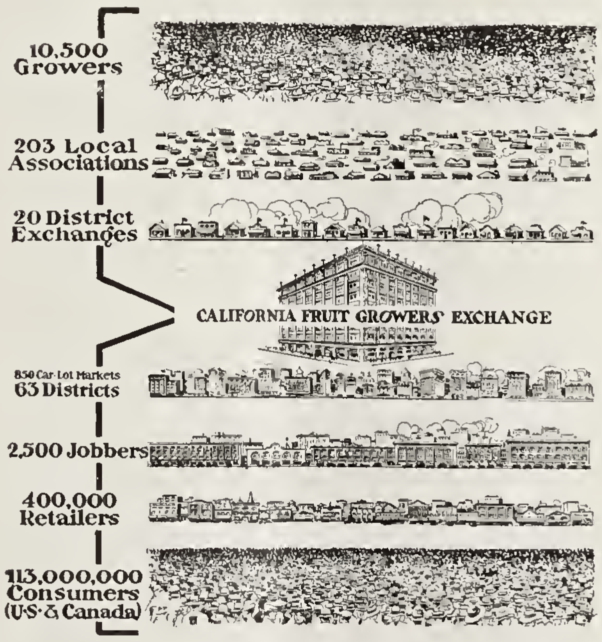
The California Fruit Growers' Exchange, which today markets the citrus fruits of its 10,500 grower members on a cooperative basis, is the result of a convention held in 1893, when the growers of California, after a long history of non-cooperation and unsystematic marketing, first faced their problem squarely and undertook to work it out.

Packing houses were built by associations of growers in various sections of the state to prepare the fruit for market. Plans were made and gradually carried out for marketing through a central organization.

All operations of the packing houses and the marketing organization were conducted at cost. An estimated amount was deducted from the returns and this adjusted at the end of the season to exact cost. Great savings were made in both the cost of packing and marketing, and through their organizations the growers began to work out improved methods which largely eliminated the losses from decay, and standardized the grades and packs of the fruit. Further economies were made possible through the cooperative purchasing of supplies for the individual associations.

Representatives of the central organization, the California Fruit Growers' Exchange, were placed in the principal cities of the United States and Canada to facilitate the handling of the growers' oranges and lemons.

Soon the trade found it much more satisfactory to deal with a central body with representatives on the ground than to negotiate with a scattering of individual shippers who were nearly 3,000 miles away. The jobber and retail merchant found that the fruit now shipped under improved methods kept better, was more uniformly graded and more attractively packed, and therefore easier to sell, and that supplies were available with greater regularity.



The plan of organization of the Fruit Growers' Exchange

The production of new groves, continually coming into bearing, caused the shipments to increase constantly so that the exchange began its Sunkist advertising to increase the consumption of these luscious and healthful fruits.

Today the California Fruit Growers' Exchange is composed of 203 separate associations or shippers, handling the fruit of its 10,500 growers through 20 sub-exchanges. The Exchange has its own representatives in 87 markets of the country. Shipments in a normal year are now ten times as large as when the organization was formed, and when growers were continually faced with the fear of over-production.

The Plan of Organization

The functioning of the exchange in distributing the growers' crops is similar in many respects to the United States Post Office. Neither the Post Office Department nor the exchange is operated for profit, but rather for mutual benefit. Each acts as a clearing house providing the facilities for gathering its products—letters and mail matter in one case and oranges and lemons in the other—from many sources and distributing them over a wide area. Each accomplishes for the individual what he could never do for himself and at a small cost. The cost of selling through the exchange including cost of all the Sunkist advertising is only two per cent of the value of the fruit sold.

To perform this service for its growers the exchange has constructed efficient collecting and distributing machinery. Owing to the large volume of business handled it is possible to systematize the work, employ labor saving methods and cut costs for the benefit of all parties. Today thousands of cars of oranges and lemons are properly marketed, through this cooperative organization, at a cost of less than seven cents a box.

The products shipped through the exchange are oranges, lemons and grapefruit. The better grades of these fruits are packed with the wrappers and box label bearing the famous Sunkist imprint. The exchange is the clearing house, formed and operated by the growers themselves, through which the producer may sell and the jobber may buy with the assurance of getting a square deal.

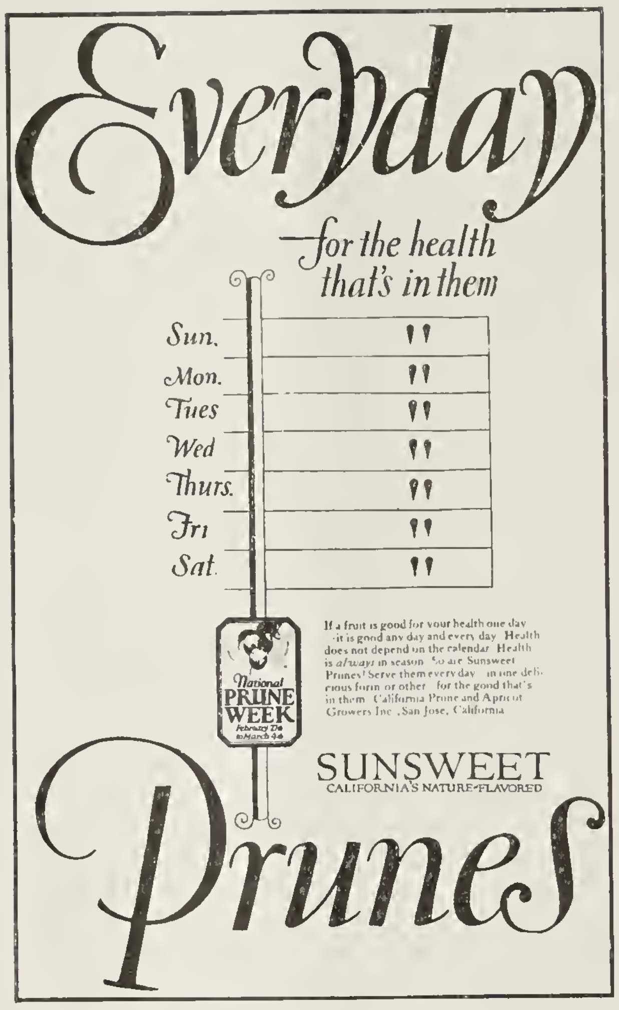
The Raisin Industry

The Sun Maid Raisin Growers, uniting more than fourteen thousand vineyardists or 90 per cent of all raisin grape growers in the United States in the packing and marketing of their products, came into existence in 1912. After unsuccessful attempts at organization Fresno business men and vineyardists in that year started an agitation for a raisin company to work hand in hand in stabilizing prices with the Raisin Growers Exchange, an organization formed two years previously to provide a central place for the buying and selling of raisins and to keep a record of all sales and prices.

The organization was to be known as the Million Dollar Company, with a million dollars capital to buy raisins without attempting to name a price or control the market. It was planned upon the basis of a Voting Trust Agreement. The territory from which the subscriptions were drawn was divided into five districts. Five trustees were elected from each district, chosen by those who had subscribed to the stock. These trustees became the legal representatives of the subscribers with full power to act for them in incorporating the company and in conducting the business for the life of the trusteeship, a period of seven years. At the expiration of the original Voting Trust Agreement it was renewed, the number of trustees, however, being increased to thirty, six from each of five geographical districts, giving representation to growers from every part of the raisin producing territory. The trustees issued to each subscriber a trust certificate which set forth the number of shares to which he was entitled. The subscriber is entitled to the beneficiary interest, but the voting power is left in the hands of the trustees. The voting trust is created for successive seven year periods, the agreement specifying that upon the expiration of the term of office of each board of trustees the subscribers shall surrender all trust certificates and that shares of stock in lieu thereof shall be issued to the certificate holders.

During the period of organization in 1912, after stock subscriptions totalled three-quarters of a million dollars the trustees incorporated the California Associated Raisin Company under the corporation laws of California and elected seven directors.

Shortly after this an eastern advertising firm was called upon to supervise the advertising campaign of the organization. A trade mark was adopted, the Bear Brand, and the brand name, Sun Maid, was decided upon. From the second year of the campaign consumption of Sun Maid raisins has steadily increased.


Everyday
for the health that's in them
Sun.
Mon.
Tues
Wed
Thurs.
Fri
Sat.
National PRUNE WEEK February 26th to March 4th
SUNSWEET
CALIFORNIA'S NATURE-FLAVORED
Prunes

If a fruit is good for your health one day —it is good any day and every day. Health does not depend on the calendar. Health is *always* in season. So are Sunsweet Prunes! Serve them every day — in one delicious form or other — for the good that's in them. California Prune and Apricot Growers Inc., San Jose, California

An illustration of the advertising done by the Prune and Apricot Growers

In 1921 the company began direct selling to jobbers and wholesalers through its own sales force. The corporate name of the organization was changed in February, 1922, from the California Associated Raisin Company to Sun-Maid Raisin Growers.

It is largely through the efforts of this organization that the raisin has become a kitchen staple. "Have you had your iron today?" is the widely heralded slogan which has done much to awaken the American housewife's appreciation of the fruit.

Merchandising Prunes and Apricots

The California Prune and Apricot Growers Association as a cooperative sales organization was conceived and promoted in 1916, in the Santa Clara Valley. The slogan of this group of promoters was "Organize to Merchandise a Standardized and Advertised Product and Insure a Stabilized Market."

Previous to the association the growers were making their sale entirely to a group of commercial packing concerns. Some of these institutions had grown to such large proportions that the markets were influenced according to their speculative interests. They were more interested in the fluctuations of markets and profit to be had in buying and selling than in maintaining a fair average level of market insuring profit to the producer. Under this speculative system the producer was receiving approximately 25 per cent of the consumer's dollar.

Since the association has been in the field its products and brands have been advertised and merchandised in a world-wide sales campaign. Under the new order and economical distribution without speculative waste both the consumer and producer have profited and the producer get about 50 per cent of the consumer's dollar.

The California Prune and Apricot Growers, Inc., is the nucleus around which over eleven thousand prune and apricot growers have rallied, to stabilize market conditions, to prevent gambling in prunes and apricots by individual operators; to increase demand for prunes and apricots; to take care of increased production; to standardize packing; to insure growers a fair percentage.

Promotion in the association has been in some ways more difficult than in other industries, from the fact that growers have never been driven to organize. Owing to the efforts of the association even through the difficult season of 1920-1921 values greater than the cost of production were maintained, excepting in individual cases of crop failures or other circumstances purely the misfortune of the individual. Prune and apricot growers have not tasted for some years the dregs of a broken, glutted and wholly stagnated market. Preparedness, rather than invention, has been the reason for progress in this organization.

The Sunsweet and Growers Brand are the designations under which the association puts out a guaranteed pack of prunes and apricots. The Growers Brand is used to take care of slight variations in the standard.

Through the efforts and the undoubted success of these California organizations much has been done to break the old prejudice against cooperative marketing. Jobbers and wholesalers generally are willing to admit that the fruit industry has been strengthened immeasurably by the new system of distribution and the market for California fruits has been stabilized in a way that would have been impossible under former methods. Fruit growers no longer fear that prices will eventually return to the levels of even a few years ago, and scientific distribution, well formulated sales policies and judicious advertising insure that even the largest crops will be marketed satisfactorily.

Standards for Tin Plate To Be Urged

Services of Bureau of Standards Are Sought by Canners to Standardize Gage and Quality of Production

REPRESENTATIVES of canners, can makers, and tin plate manufacturers throughout the country, at a meeting in Washington on August 15, will urge upon representatives of the United States Bureau of Standards the necessity for standardizing the gage and quality of tin plate. Efforts of the National Canners' Association and others to obtain the services of the bureau in developing tin plate standards have resulted in the filing with that department of a brief, based on a research in the manufacture of tin plate, which, so severely does it criticize the quality of the product, has aroused intense feeling between canners and manufacturers and may call forth a reply from the latter before the meeting is held. It is understood that the Bureau of Standards will participate in the meeting only so far as is necessary to develop cooperation between the manufacturers and users of tin plate.

Inferior Quality Claimed

The brief, which has been prepared by a committee headed by Dr. W. L. Elwell, of Burnham & Morrill, Portland, Maine, points out that, following the development of the tin plate industry in this country, there was an increase in the number of can manufacturing companies and a still larger increase in the number of canners supplied with cans from this source. Later, the invention of machines for closing cans without the use of solder resulted in a radical change in the style of cans. The ultimate result has been the almost complete dependence of a majority of the canners upon can-making companies for their seasonal requirements and these, according to the brief, are procured under a form of contract which obligates the acceptance of cans "of the regular standard style and quality heretofore furnished by seller in the usual course of its business." The brief contends that the quality of the cans varies considerably "from time to time, so that in the course of years this term is without value as a specification." It is pointed out that cans are one of the few articles that the canner purchases which are made under specifications other than his own, only a comparatively few of the largest canning companies being so situated that they can now manufacture their own cans from plate of their own selection.

"The majority of canners," the brief states, "use cans made by the can-making companies from commercial 'coke plate'—the plate in common use—which is the grade carrying the least quantity of tin coating commercially produced. Contracts are quite generally based upon cans made of this commercial plate. The term 'coke plate' is a manufacturer's term, and means nothing more definite than ordinary commercial plate as manufactured at the time.

"The gage, ductility and amount of tin coating of this coke plate have been changed from time to time to suit the convenience or necessity of the manufacturer, and usually without consulting the purchaser of cans. But, nevertheless, the term 'coke plate' (probably for want of a more definite one) is used as a specification in contracts."

The brief points out the practical impossibility of inspecting cans carefully when they are received at a canning factory, since they must be handled rapidly. Hence, if the cans are made of plate that is too thin or too brittle, it is rarely discovered by the packer until many of them have been filled with food products of far greater value than the can, and frequently the filled cans are shipped long distances before imperfections are revealed, with the final result of losses running into millions of dollars annually. In the end the consumer pays for this loss. The brief declares that if the canner were provided with a standard term, its use in contracts would mean that cans of certain sizes in common use would of necessity be made of plate of a gage not less than a definite measure for each size, and that the plate would be "free from excessive brittleness as determined by its ability to withstand a definite number of flexures back and forth without fracture, and would afford relief to the present one-sided situation, which leaves the determination of these important qualities entirely to the tin plate mills and can makers."

Unnecessary Wastes

The brief sets forth what are called faults in connection with the present practice on the part of canmakers of accepting a certain proportion of waster plate that has considerable areas entirely free from tin coating, and points out that material is heavy and the freight paid on plate that is not fit for manufacture into cans is considerable and constitutes unnecessary waste. While efforts are made in can factories to re-sort the plate, they are largely futile, it is maintained, because of lack of facilities and dependence upon the human element "chiefly young women employes." Dealing with other subjects that are made the object of criticism, and suggestion, the brief says:

"The practice of sorting plate for gage by testing its weight by hand is faulty, because the irritability of the nerves and muscles involved is soon exhausted, so that after a few hours of this work wide variations in weight are passed without notice. It is believed that some mechanical device could and should be used for this purpose.

"Ductility and flexibility, that is, freedom from brittleness, can be determined only by accurate mechanical means, which should be employed at the tin mills before the steel plate is coated to avoid waste. The type of can now in very general use is made by locking the seams before soldering and by rolling the top and bottom to the body without solder, which necessitates an acute bending of the plate. If the plate is too brittle, fracture of the surface results, which, of course, exposes considerable areas of the steel plate to the action of the contents of the can and often results in leaks.

Standards for Tin Coating

"A definite standard for the amount of tin coating should be established. The tendency has been to reduce the amount of tin coating to a minimum, which was perhaps necessary during the war on account of a shortage of tin. It has been definitely determined, however, that a heavier coating such as 'Charcoal A Plate,' offers much greater resistance to perforations than the lighter coating of 'Coke Plate.' Coke Plate also has a tendency to rust. It is believed that a definite standard should be established for the amount of tin to be used on steel plates in the manufacture of tin plate for canners' cans.

"Because of the impracticability under present methods of securing an accurately even coating of tin on any given number of plate, or even over the whole area of a single plate, it is the custom to express the proportion of tin used on different grades of plate by pounds of tin 'per base box' containing 112 sheets, 14 by 20 inches. In the case of commercial coke plate this has now been reduced by improved (?) methods from the former practice of approximately 2½ pounds to an average of 1.41 pounds per base box. It is felt that the standard for plate for canners' cans should not carry less than 2 pounds of tin per base box.

"A considerable percentage of the losses are due to the perforation of the plate within a few months after the goods are packed. This occurs chiefly in the case of fruits and berries, but is extremely variable.

"Certain products which are largely preserved in tin cans are subject to discoloration by iron sulphide, which, while harmless to human beings in the quantity developed, nevertheless damages the appearance and flavor of the product to an extent that frequently renders it unfit for sale. Trouble and loss from discoloration have greatly increased during the past ten or twelve years.

"The trend of opinion among canners, arrived at largely by the process of exclusion, is that the chemical and physical characteristics of steel base plate used in the manufacture of the tin plate of today is an important factor in the very irregular development of iron sulphide in certain products which is the principal cause of black discoloration.

X-Ray Examinations

"Among other methods employed in the study of the qualities of the steel base plate, some preliminary examinations by means of the X-ray have been made, with a view to determining any variability in the density or other physical properties in different parts of a single plate. These examinations reveal in some instances considerable areas that offer less resistance to the ray than the areas immediately adjoining. In some plate, taken from cans that carried iron sulphide, minute areas are revealed that offer comparatively little resistance to the X-ray and suggest porosities or imperfections. The X-ray plates, showing as they do a lack of homogeneity here and there in some of the base plates offer a possible explanation of the very great irregularity with which perforation occurs in the case of fruits and berries, and may also have a bearing upon the unexplained variability with which black discoloration occurs.

"It should be stated in this connection that much study has been given to variable qualities of food products that are affected by black discoloration but the fact remains that many of them carry a certain percentage of protein which is subject to decomposition by the heat necessary to sterilization and gives up hydrogen sulphide, which in the presence of oxygen and iron, tends to form water and iron sulphide.

"It has been found necessary in the manufacture of steel rails and armor plate to secure a special quality of steel homogeneous throughout and free from a tendency to fracture. It is believed that a special quality of steel plate, uniform and homogeneous in character, and free from a tendency to fracture on the surface, is necessary for the production of an entirely satisfactory quality of tin plate for canners' cans. A large amount of data bearing upon this question has been secured by the tin plate committee of the National Canners' Association, which are available in connection with this brief. These data have been secured in the steel and tin plate industry. Experience has shown that the problem is a difficult one, but possibly no more so than the determination of the right quality of steel for armor plate or razor blades."

Macaroni Association Re-elects Officers

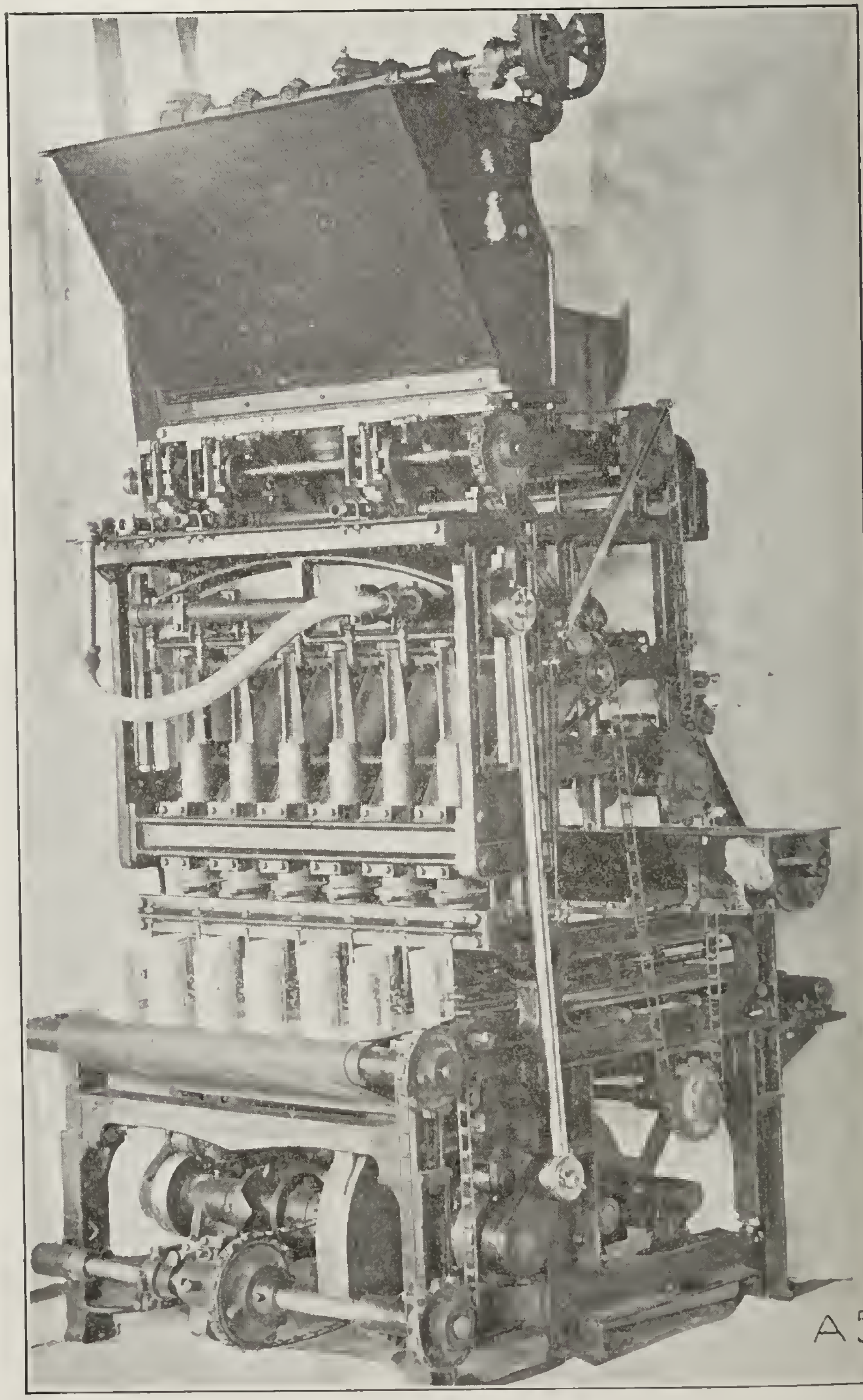
OFFICERS of the National Macaroni Manufacturers' Association, with one exception, were re-elected at the annual convention at Cedar Point Sandusky, Ohio, June 12-14. These are: president, Henry Mueller, of Jersey City; first vice-president, E. Z. Vermylen, Brooklyn; second vice-president, H. D. Rossi, Braidwood; treasurer, Fred Becker, Cleveland; secretary, M. J. Donna, Braidwood; directors, James T. Williams, Minneapolis; A. C. Krumm, Jr., Philadelphia; William A. Tharinger, Milwaukee.

The convention went on record as strongly opposing the use of coloring in macaroni products and urged that federal and state laws be adopted that will do away completely with this abuse. Other resolutions endorsed the Eat More Wheat campaign, national consumer and educational advertising, compilation of dependable statistics covering the industry, and introduction of a uniform cost system.

Rapid Handling of Foodstuffs by Automatic Machinery

EQUIPMENT for the automatic weighing and packing of food products must possess several qualifications: Speed is essential to lower cost of production. Precision of weights is required to insure a correct package. Durability of construction is demanded so that shipments may be got out on time. In addition to these requirements, the machinery must be designed so that the products will be exposed to the air the shortest possible time, and so that the materials will not in the course of handling come into contact with human hands.

The machine shown in the accompanying illustration is used for packing baking powder. It will fill one pound cans with between eight and nine tons of this product in eight hours, the work being automatic in every particular. Other machines are designed especially for weighing and packaging salt, coffee and various other food products. If the product is packed in cotton bags or pockets, a sewing machine completes the automatic operation; if a pasteboard carton is used, sealing machinery automatically closes the carton so that it is practically airtight.



Margarin Manufacturers Meet in Atlantic City

Need for Research Laboratory to Study Trade Problems is Discussed by Speakers at Fourth Annual Convention

THE addition of four new members to the Institute of Margarin Manufacturers at the fourth annual convention of that association, held in Atlantic City, June 14-15, brought the tonnage of membership to practically 95 per cent of the total tonnage of the industry. The new members of the institute are the John J. Jelke Company, of Chicago; the Nucoa Butter Company, of New York, the Churngold Corporation, of Cincinnati, and Kellogg Products, Inc., of Buffalo.

The membership was practically unanimous in adopting the following resolution relating to legislation against margarin manufacturers:

WHEREAS, it is apparent that the attacks against margarin will continue, and

WHEREAS, it is almost certain that more legislation inimical to margarin is impending, now, therefore,

BE IT RESOLVED, that it is the sense of this convention that all manufacturers of margarin be urged to check up carefully on their manufacturing and selling methods and practices in order that no methods or practices exist to which exception can be taken, or which can be urged by the enemies of margarin as grounds for more drastic legislation, and

BE IT FURTHER RESOLVED, that all manufacturers of margarin urge the jobbers and dealers with whom they deal to do likewise.

Papers read at the convention discussed the manufacture, keeping qualities, transportation, sale and advertising of oleomargarine. Among them were the following:

"Manufacturing Methods," by Arthur D. Henss, general superintendent of Margarin Factories, Armour & Company, Chicago.

"Factors Influencing the Keeping Qualities of Foods," by Dr. Charles Thom, chemist in charge, Microbiological Laboratory, Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

"What the Research Laboratories of the National Canners' Association Have Accomplished," by Dr. W. D. Bigelow, chief chemist, National Canners' Association, Washington, D. C.

"Outdoor Advertising," by A. de Montluzin, Poster Advertising Company, Inc., Cincinnati.

"Some World-Wide Economic Phases of Edible Fats and Oils," by E. G. Montgomery, chief, Foodstuffs Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

"Animal Fats and Vegetable Oils in Human Nutrition," by Dr. W. D. Richardson, chief chemist, Swift & Company, Chicago.

"Standardizing Natural and Manufactured Foodstuffs," by Dr. W. W. Skinner, assistant chief, Bureau of Chemistry, U. S. Department of Agriculture, and chairman of the Joint Committee on Definitions and Standards, Washington, D. C.

"Cooperative Advertising," by Theodore E. Ash, Theodore E. Ash Advertising Agency, Philadelphia.

Address by Louis N. Geldert, assistant to the president, Interstate Cottonseed Crushers' Association, Washington, D. C.

"False Advertising," by J. S. Abbott, secretary, Institute of Margarin Manufacturers, Washington, D. C.

The following paper on food values and vitamines was read by Dr. Arthur J. Holmes, director of the Research Laboratories of the E. L. Patch Company, Boston. Other addresses delivered at the convention will be published in later issues of The American Food Journal.

Food Values and Vitamines from the Manufacturer's Standpoint

By DR. ARTHUR D. HOLMES

IN developing the present-day commercial food products, the manufacturer has devoted a large amount of time, attention, and expense to the perfection of products which will meet the public's requirements as regards appearance, palatability and nutritive value. Considering the industry as a whole, the commercial food manufacturer has been inclined to give far more attention to the appearance and palatability of his food products than to their actual nutritive value.

However, as the results of scientific investigations show the value or the lack of value of various food materials, the public is slowly coming to inquire more and more as to what they are receiving in return for the money which they are expending. As the medical profession investigates the causes and the best treatment of nutritional diseases, the physician becomes more and more definite in the type of diet that he prescribes for his patient. Also, the modern physician, in accordance with the present-day trend toward preventive medicine, tends to outline the type of diet which is desirable in order to keep one in a high state of physical well-being, which in itself serves as a preventive against many possible sicknesses.

This awakened interest shown by the public concerning the actual nutritive value of foodstuffs has caused the progressive food manufacturer to study the food value of the product which he is producing. The meat packer has been taking an account of stock to secure information as to just what role meat plays in a person's diet. Consequently, meat is not advertised as being a good source of carbohydrates, such as starches and sugars, but rather attention is called to its high value as a source of tissue-forming material. On the other hand, the manufacturer of fat and cereal products says little or nothing concerning the value of his product as a source of tissue-forming material, but points out its particular value as a source of the energy required for keeping the body warm and for body activities, such as work, and recreation. The fruit growers' associations, and commercial canning concerns which produce fresh, dried, or canned fruits and vegetables extol the merits of their products from the standpoint of mineral salts, vitamines, and other dietary constituents.

In discussing the question of food values and vitamines, from the standpoint of margarin manufacturers, it will be of interest to consider for a moment the factors which influence the food value of fats and oils. When a scientist selects foods that will meet all the body requirements, as regards growth, reproduction and maintenance, he includes fats in the diet as a source of energy.

Fats, together with the carbohydrates, such as the starches and sugars, serve in the human machine essentially the same purpose that coal serves when burned in a heating plant or in an engine. For when the fats are burned in the body, they serve to keep it warm and as a source of energy for muscular activities. Considered from the standpoint of practical dietetics, the value of a fat or oil as a source of energy depends upon its composition and the extent to which it is digested. On referring to the composition of the fats and oils commonly eaten in this country, one finds that they are divided into two groups: the vegetable oils and the rendered animal fats, such as pork, beef, mutton and chicken fats are 100 per cent fat. Dairy butter and the animal and vegetable margarins are approximately 82 per cent fat; the remaining 18 per cent is water, salt and casein which have little or no energy-producing value. On account of this variation in composition, the energy-producing value of fats and oils varies from approximately 4,100 calories per pound for the 100 per cent fats to approximately 3,600 calories per pound for butter and margarin.

A knowledge of the chemical composition of a fatty food does not supply complete data concerning its value as a source of energy. In addition, information must be obtained regarding the extent to which that product can be utilized by the human body, or in other words, to what extent it is digested by the average normal individual.

Investigators, both in this country and abroad, have determined the digestibility of a considerable number of commonly used animal and vegetable fats. Probably the most extensive investigation of the digestibility of edible fats and oils was made by the Office of Home Economics of the United States Department of Agriculture. In that investigation, we determined the digestibility of some sixty to seventy edible fats and oils under experimental conditions which were maintained as uniformly as possible for all the fats which were investigated. Speaking in general terms of the results obtained in that extended investigation, all the edible fats and oils were found to be well digested. Those fats that are fluid at body temperature and thus become intimately mixed with the digestive fluids during the process of digestion were almost wholly utilized. The fats that are solid at body temperature were less completely digested. With human subjects, it was found that such fats as cocoa butter, mutton stearin, oleo stearin and hydrogenated vegetable oils which had melting points of 37 degrees to 52 degrees Centigrade, were from 80 to 90 per cent digested. The fluid fats, such as cottonseed, peanut, soy bean, olive and cocoanut oils, were 95 to 100 per cent digested. From these results, one would anticipate that margarins manufactured from the softer fats and oils would be well utilized by the body. The results of unpublished experiments show this to be the case. Thus it is apparent that margarins furnish the body the same energy value as other edible fats of like composition and digestibility.

During the last few years a large amount of time has been given to studies concerning the value and limitations of vitamines as a constituent of the human dietary. At the present time there are at least three well recognized vitamines, and it is generally accepted that all must be present in the diet if the health is to be maintained. Inasmuch as little is known concerning the physical and chemical characteristics of vitamines, they have been designated Vitamines A, B, and C.

Vitamine A is soluble in fats and is found in largest quantities in cod liver oil, milk fat, and egg yolk fat. It is found to some extent in the vital organs, such as heart, liver and kidney, and to a lesser extent in fruits and vegetables. The lack of this vitamine in the diet causes a type of malnutrition characterized by a decrease in body weight, emaciation, and an eye trouble variously called xerophthalmia, ophthalmia, or keratomalcia. The presence of Vitamine A in the diet serves as a preventive against the development of this form of malnutrition.

INSTITUTE OF MARGARIN MANUFACTURERS

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Vitamine B and Vitamine C are soluble in water and are found in largest quantities in yeast, and citrus fruit juices respectively. These vitamines, like Vitamine A, must be constantly in the diet if one wishes to maintain good health, but as they are not associated with fats they will not be considered further at this time.

Until recently it was generally thought that Vitamine A prevented the development of both xerophthalmia and rickets, but recent investigations supply evidence to show that in addition to Vitamine A there is a second fat soluble vitamine called the antirachitic vitamine. If this vitamine is absent from the diet of a growing child or experimental animal, it develops the dietary disease called rickets. But if the diet is adequate in other respects and the antirachitic vitamine is present, the child or experimental animal does not develop rickets.

While the antirachitic vitamine is a fat soluble vitamine and occurs in cod liver oil associated with Vitamine A, investigations at the present time have not been extensive enough to supply definite data as to whether the antirachitic vitamine and Vitamine A are uniformly found associated in fats which are sources of Vitamine A. Until information has been collected concerning the distribution of the antirachitic vitamine foodstuffs, it behooves mothers and physicians to exercise caution in the selection of the foods which comprise the growing child's dietary.

A number of carefully conducted investigations supply evidence that Vitamine A is synthesized only in the vegetable kingdom. The Vitamine A present in fats and oils, such as butter, cod liver oil, and egg yolk is derived from the diet of the animal producing it. When this fact was definitely established, nutrition students at once questioned whether the Vitamine A content of butter, lard, and other animal fats fluctuated with a variation of the Vitamine A content of the rations consumed by the animals producing the fat in question. Up to the present this question has received only a limited attention, but the results at hand strongly indicate that the Vitamine A content of animal fats and oils is largely influenced by the nature of the diet.

Professor Dutcher of Pennsylvania State College in the investigation of vitamine content of milk found that June milk produced on pastures of rapidly growing grass possessed four times the vitamine content of milk produced on winter feed. Drummond and his associates of England have shown that the vitamine content of lard depends primarily on whether the hog was grass or grain fed. With a view to securing information concerning the storage of Vitamine A in the liver, Coward of England has shown that the concentration of Vitamine A in the liver of a rat varies with concentration of this factor in its diet. From the results of these and other investigations, it would seem that the vitamine content of commercial lard, butter, or oleo oil in all probability varies over quite wide limits and consequently if one wishes to know the vitamine content of any of these fats, it is necessary to examine the fat in question.

In substantiation of this belief, it may not be out of place to cite here that our investigations of the vitamine potency of commercial cod liver oil show that its Vitamine A content is very far from uniform. We have found that as extremes of vitamine potency of commercial cod liver oils purchased on the open market one sample possessed one hundred times the Vitamine A content of a second sample. In view of this fact, one would be decidedly unwise in assuming a Vitamine A value for untested fats and oils. This situation has caused the present-day physician to demand that cod liver oil which he proposes to use for vitamine therapy shall be physiologically tested in order that he may have some information concerning the size of dose which he should administer.

At the present time a number of investigators are conducting studies on the possible relation between vitamines and fertility. Reynolds has reported that a moderate decrease in the Vitamine A content of the diet materially decreased fertility in rats. Matill found that rats confined to a diet of 93 per cent dried whole milk, 2 per cent salt, and 5 per cent yeast produced young that lived only three or four days. In our investigation of the vitamine potency of liver oils, we have found that when rats have suffered from Vitamine A starvation and have been brought back to health and vigor by supplementing their diet with fish liver oil, the females are regularly fertile and the males almost without exception are sterile. The oils tested in this connection were hake liver oil and cod liver oil of foreign and domestic origin. Quite recently Evans and Bishop have presented evidence that there is an unrecognized dietary factor essential for reproduction which is not identical with Vitamine A. These investigators found that animals maintained on a purified diet were sterile. But they also found that they could cause a reappearance of fertility when they modified their diet so that it contained 24 per cent of butter fat. This information would have been of more value to other investigators if data had been supplied concerning the breed of cows, their ration, the manufacturing and storage conditions associated with the production of the butter fat in question. It must be of interest to the margarin manufacturer to speculate as to what results might be obtained from a similar investigation of commercial margarins.

Very little information has been reported concerning the value of margarins as a source of vitamines, but it is obvious that the vitamine content of margarins depends upon the vitamine content of the ingredients and the amount of vitamine destruction resulting from the manufacturing process. In this latter connection it should be remembered that heat and oxygen are two factors that very rapidly destroy Vitamine A. Hopkins of England has reported that butter exposed in very thin layers to room temperature for one week loses its Vitamine A potency. A rough comparison by the British Medical Research Committee of the Vitamine A potency of oleomargarine and nut margarin shows that oleomargarine contains about the same amount of Vitamine A as beef, horse, and mutton fats, brains, heart, and sweetbreads and that nut margarin is devoid or nearly so of Vitamine A. Nut margarin made with milk or skim milk should contain some Vitamine A from this source, providing the cows producing the milk were properly fed for whole milk is rated as one of the richest sources of Vitamine A and McCollum and Sherman have reported that skim milk contains about one-half of the Vitamine A present in the whole milk from which the cream was removed. The difference in Vitamine A content of oleomargarine and nut margarin is thought to be due largely to oleo oil which is a constituent of oleomargarine and which contains detectable amounts of Vitamine A.

It is more than probable that the program for the future development of the margarin industry will include research work designed to accumulate more extensive data relative to the vitamine content of commercial margarins. To conduct successfully investigations that will yield the data which are of great value to the margarin industry, it will be necessary for the margarin manufacturers to make the investigations in their own research laboratory. In this connection it may be of interest to outline briefly the method of procedure and the type of results that we are obtaining in our research laboratories from our studies of the vitamine potency of cod liver oils.

For studies of Vitamine A the albino rat is very generally used as a laboratory animal, since its food habits are very similar to those of man; it requires a small amount of food and space, and a relatively short time for completing the life cycle which enables one in a short time to make vitamine studies through two or three generations.

In testing for the presence of Vitamine A we use young growing rats of about 40 grams weight. These are placed on a diet which is carefully selected and prepared so that it is free of Vitamine A. When fed such a diet, young rats will continue to grow until they have exhausted their body reserve of Vitamine A, after which malnutrition will become pronounced and unless the Vitamine-A-free-diet is supplemented with some food containing Vitamine A, the rats will not live long. As soon as the animals show definite evidence that their body reserve of Vitamine A is exhausted, they are fed the oil that is being tested for its Vitamine A potency.

The effect on the rat's physical condition of the addition of cod liver oil to the diet is little short of marvelous. Within a very short period, sometimes only one or two days, the rat stops losing weight and begins to show an improved physical condition. In the course of a week the scabby condition of the eyes disappears; the rough coat becomes smoother, and the animal starts growing at a rapid rate. At the end of a month or so that rat has the appearance of a normal rat.

By feeding a group of rats graduated amounts of the oil under consideration, it is possible to determine the amount of oil which will not furnish enough Vitamine A to support life, the amount that will just maintain an animal without permitting it to grow, and the amount of oil required to make an animal grow vigorously. From results of this character obtained from crude oils, refined oils and oils that have been subjected to various manufacturing and storage conditions, we are securing data as to those factors that favorably or unfavorably influence the vitamine value of the finished product.

The results of a series of carefully planned tests of this character concerning the vitamine potency of margarins should supply information to show wherein margarins fail to equal competing products as regards vitamine content, and it also should supply the necessary information relative to the modification of the ingredients of margarins, the method of margarin manufacture, or both, so that the commercial margarin of the future may be the equal, if not the peer of all edible fats and oils. While this may at first thought seem somewhat idealistic, it should be possible to manufacture margarins possessing a higher nutritive value than any other edible fat for the public recognizes margarins as compounded fats and so would accept a modification of the ingredients or manufacturing conditions that would not be tolerated in the case of naturally occurring fats and oils.

The carrying out of such a program would involve extended investigations by a well equipped research laboratory. But just as the National Canners' Association, the Institute of American Meat Packers, American Institute of Baking and other industries have established research laboratories, so should the manufacturers of margarins make their own investigations of research problems which concern the entire industry. If any margarin manufacturer is doubtful as regards the benefits to be derived from the establishment of a research laboratory by the Institute of Margarin Manufacturers, he should review the results of such research laboratories as that of the National Canners' Association.

Considering this very general discussion of food values and vitamines from the margarin manufacturers' standpoint, it has been pointed out that margarin is a food possessing a high energy value; that it is very completely digested; that little or nothing is known concerning how much of the antirachitic vitamine or the unidentified food accessory necessary for fertility it may contain, and finally that while its Vitamine A content is relatively low, a carefully conducted investigation should reveal the possibility for correcting this defect in the future.

THE CONFERENCE TABLE

Selling the Other Man's Product

By DANIEL P. WOOLLEY

Vice-President, The Fleischmann Company, New York

WHAT would you think of a food manufacturer who told you that he expended much time and a large part of his advertising fund in trying to sell another man's product? In all probability you would put him down either as a harmless crank or a gentleman with an over-stimulated imagination. Yet the thing has been done, and with what success it may be interesting to note.

There are certain types of food which may be classed as intermediate products—that is, those which are used almost solely as ingredients of other manufactured foods. While they may be advertised and sold to some extent to the retail consumer, any great increase in their consumption will depend upon an increase in demand for the product, in whose manufacture they are essential. In this group are such articles as cooking chocolate, flour, shortenings and our own product, yeast.

Fleischmann Service

It is true that yeast is sold to retail consumers either as a corrective food or for use in bread making, but by far the greater part of our output is used by the retail and wholesale baker. The development of this field for sales has been brought about largely by the fact that our consistent advertising of bakers' bread coupled with aid to the baking industry in various other forms, has led to an enormous increase in the demand for bread and consequently in the demand for yeast. It follows therefore that the interests of the two industries are closely knit, and that any progress made in the manufacture of bread which leads to increased sales will indirectly promote the sale of yeast. So strong is our faith in this principle of unity of interest that a large part of our energies is directed toward the advancement of the baking industry, and our entire organization is concerned quite as much with the giving of Fleischmann's service as with the sale of Fleischmann's yeast.

We believe that service, like charity, should begin at home, and so our first concern is to see that our own product is delivered to the baker in perfect condition and with absolute regularity. Perhaps there is no better criterion for judging the dependability of any form of service than the degree to which it is taken for granted. Judged on this basis we believe that our system of distribution closely approaches perfection. No district has ever been so cut off from communication by fire, flood, or blizzard that a Fleischmann agent has not found a way to deliver his product. His methods, to be sure, have been novel. He has hired an aeroplane, bought a fleet of motor trucks or risked his life on bridges, but always he has got there, generally to find the baker awaiting with calm assurance the delivery of his yeast.

Daniel P. Woolley

Business Counsel

If a Fleischmann representative is to deliver service as well as a product he must be something more than a salesman in the ordinary sense of the word. In this instance he must be general counselor in time of trouble—for bakers, like any other class of manufacturers, stand, at times, in urgent need of an industrial doctor. It is the role then of the Fleischmann representative to discuss with these men the nature of their business symptoms, to diagnose their cases if possible, and to prescribe and help administer remedies.

In times now happily past the Fleischmann doctor was frequently called in to prescribe for ills of sanitation, for many housewives shunned bakers' goods either because of the unsanitary conditions which at that time existed in some shops or because of the poor quality of materials used in the manufacture of bread. Now, however, thanks to the housewife's frank expression of her disapproval, to the bakers' own progressiveness and to the standards which have constantly been advocated by the Fleischmann Company, these evils have been almost entirely overcome. Today the average bakery is a far more sanitary place than the average home kitchen, with the result that the prejudice against bakers' goods has been largely done away with, and the housewife who still bakes her own bread is fast becoming a thing of the past.

Frequently the causes of trouble in a bake shop are obscure, and the baker himself has difficulty in "placing his finger on the sore spot." He knows only that for some reason his product falls short of being topnotch. His first thought when in trouble is to send for one of the Fleischmann expert bakers who will work with him in his shop and there try to solve his problem. If the indications are that the trouble lies not in shop methods but with the ingredients used, the demonstrator will send them on to one of our laboratories for analysis or criticism. In rendering this sort of aid excellent opportunity has been afforded for effectively putting across standards for quality bread.

A Baking Institute

We also offer to the wide-awake baker, without charge, a three or four weeks' course in our baking laboratory in New York City. Here we aim to give him the "why" of his business. The course covers the technical manufacturing problems which confront the baker and often inspires the establishment of a small laboratory in his own shop. About one hundred men avail themselves of this opportunity each year. This is nearly the limit of our capacity as in many cases individual instruction is necessary.

A good "carry through" is quite as valuable in delivery service as in golf or tennis. And so our representative does not count his task done when he has helped the baker bring both his shop and his product up to standard.

There still remains the problem of telling the consumer about it and of pushing the sale of these quality goods. This is not difficult, for through the aid of our Sales Promotion Department a complete advertising campaign, suited to the needs of the individual baker, will be outlined with him and prepared for him at no other expense than the actual cost of materials used in the printing of the layout. These layouts vary in scope from the advertising leaflet to the complete campaign, which includes circular letters, leaflets, bread wrappers, car cards, posters, window displays, suggestions for bill boards. During the month of March, 1923, fifteen hundred bakers used advertising material suggested and prepared by our company.

Since 1919 we ourselves have conducted great national campaigns for the sole purpose of encouraging the American public to eat more bakers' bread. Many millions of magazine readers have been reached with the message, "Bread is your best food. Eat more of it." Car cards in fifty thousand street cars in four thousand cities and towns have told the same story. This year, in practically every town in the United States and Canada with a population of more than ten thousand posters will appear proclaiming the value of bread as food and the importance of the baking industry. The impetus given to bread sales through this advertising has been enormous, and has been made doubly effective by the fact that many bakers, realizing the value of the publicity, have linked up to it their individual campaigns.

All these activities then are grouped under the term Fleischmann Service. Plainly it fills a real need of the baker. He knows that it could not be given so generously and so efficiently if we had not made his interests our own. And so he has come to regard us rather as a partner in his business than merely as a source of supply for one of his necessary materials. Any business relationship with such a feeling as its basis is not easily broken. A baker who has once grown accustomed to our service is a hard fish for another man to catch. Our customers "stick," and the ever increasing amount of our yearly sales leaves no room for doubt in our minds that our method of boosting another man's business is an investment that pays and pays well.

The Educational Program of the Retail Grocers

By FRANCIS E. KAMPER

President, National Association of Retail Grocers

FOR a long time the retail grocers of America have been wondering, quite uneasily, what was the answer to all of their perplexing problems. We are conscious that our friends in the food distributing and manufacturing field have been as much perplexed as we.

Expedients of almost all kinds have been tried, and especially have we given thought to legislative matters, in the hope that therein lay our salvation.

Through the intelligent endeavors of our cousins across the waters, who have had the insight and initiative to start their Institute of Certified Grocers, we have finally come to the conclusion that to improve conditions in our line we must improve the personnel of our great craft; that one unworthy member or incompetent member can undo the good work of a hundred good grocers. These conclusions have in recent years become crystallized through the attacks made upon our body of merchants through various political and economic forces, most of which culminated immediately after the war.

Today there is a large body of retail grocers—larger than any of us realize—that is committed in theory to any sane plan that will improve our personnel.

The Better Grocers Plan

The most gratifying thing that has been done within the past twelve months—the plan that the National Association of Retail Grocers has ready to offer to the business world—has received the hearty cooperation of practically every executive of the large national food distributing and manufacturing associations.

Francis E. Kamper

The Better Grocers Bureau will then start its kindergarten course, at the young and tender age of 18 months, to show the advantages of better organization.

One has but to look over Bradstreet's 1922 year book—"Failure Statistics, Their Meaning and Utility—A Record"—to realize that any educational program that will improve the quality and competency of those going into business is worth cash dividends, payable weekly. Listen to this:

CAUSE OF FAILURE (quoting from Bradstreet):

It should be stated here for the information of those not acquainted with Bradstreet's past records of causes for failure, that the one time leading reason for failure, lack of capital, has tended to shrink in importance, while the weight assigned to incompetence has so risen as to have practically taken its place as a disturbing element. In the years 1890 to 1911 inclusive lack of capital stood first as a source of business failure, from 39 to 30 per cent of all failures being thus variously credited. In 1912, however, incompetence assumed first place, and except in 1913 and 1914 it has since held that position. In 1922 incompetence caused 34.2 per cent and lack of capital 30.8 per cent of all failures. (Both of these in my opinion should be classed as incompetence.)

For Sound Business Policies

Time doesn't permit of a more lengthly recital of causes of incompetence herewith, but certainly there cannot be a manufacturer or jobber, and certainly a retailer who will not give his enthusiastic support to our earnest effort to do something that will improve the average intelligence in the retail field. Through the wisdom of the Advisory Board, which will consist of retailers and the heads of every national association dealing in either the distribution or manufacturing of foods, and which will hold its first meeting shortly, sound policies are sure to come, and the better grocers bureau is bound to mean much.

EDITORIAL

The Responsibilities of the Food Manufacturer

SPEAKING at the recent convention of the National Macaroni Manufacturers' Association, Charles Wesley Dunn, counsel for the American Specialty Manufacturers' Association, said, among other things:

"The food manufacturer can sometimes preach a better sermon than the clergyman."

Examined in the light of business facts where does this statement lead?

Surely to the inspiring realization that the food manufacturer has a more than worth-while job!

This job gives him his choice, as Mr. Dunn pointed out, between keeping so busy with non-essentials as to lose sight of the broad questions involved in the manufacture and distribution of food or of becoming a dominant and stabilizing figure in the economic world; this means a contribution likely to prove of inestimable value in these days of readjustment.

The food manufacturer's job gives him the power to set the keynote of one-third of the lives of as many individuals as he has employes. He can in large measure lay the foundations for their physical health and consequent efficiency and happiness; he can create conditions for their working hours that may exert a large influence over their mental and spiritual attitudes toward life, and by the same token send them out into the world sane and forceful citizens.

The food manufacturer can set his face so determinedly against any conspiracy likely to cut off other men's business that he who runs may read and profit by the open book of this man's life.

"Business fails," said Mr. Dunn, unless it pays two dividends, one to the stockholders on the money invested, the other on the character values represented by the high minded manufacturer.

To assist in building the larger conception of values, to re-interpret the responsibilities and opportunities of citizenship, to carry the banner of good health both of body and mind over into the country of greed and graft, of carelessness and craft, all these, and more, does it mean to be a food manufacturer!

Is There A Solution of the Sugar Situation?

TRUMAN G. PALMER, sugar statistician and editor of "Concerning Sugar," writes:

"In the United States we have sufficient sugar beet area from which to produce the sugar of the world but we produce at home only about two-fifths of the sugar we consume, importing the balance from Cuba which is beyond the reach of our trade regulatory laws."

As a wholly impartial observer The American Food Journal raises the question:

Is it worth while for the American people to study the sugar situation in relation to beet sugar and its possible service?

Mr. Palmer says further:

"The extra $222,000,000 which the present sugar gouge is costing the American people is a sufficient sum with which to erect nearly two hundred one-thousand-ton beet sugar factories with a capacity of producing two million tons of sugar a year. Not only would this insure the American people against future sugar gouges, but under normal conditions of six cent sugar and six dollar beets the seventeen million tons of beets required to make this two million tons of sugar would annually turn $102,000,000 into the pockets of American farmers instead of its going to the exploiters of Cuba who never miss an opportunity of robbing the American people.

"However much or little sugar we produce at home, American producers, dealers and speculators all are amenable to every United States law which has been or which may be enacted to protect consumers from extortion. The solution of the sugar question would appear to be plain."

Considered from the point of view of food values and public health the case for beet sugar would seem to be of at least equal strength with that of cane. True, in the raw state beet sugar has a strong and not altogether pleasant odor, but in the process of manufacture a food product is turned out that is apparently as valuable a food, or source of energy, as the most refined cane sugar on the market.

Purely as a question of national economics the matter might repay further study.

Inter-Relationships of the Food Industry

IN a plea for closer coordination of effort within the food industry, Dr. Frederic Dannerth, secretary of the Food Products Institute of America, calls attention to the need for a central clearing house of information on matters pertaining to finance, economics, commerce and technology.

The institute is already busy with tentative plans for the formation of such a clearing house. Dr. Dannerth points out that any movement which tends to keep agriculture, industry and commerce attuned to the same key will be productive of good results. This service is one that the Food Products Institute of America hopes to perform.

There are at least thirty different groups among the food trades, each functioning, it is true, through its own trade association, but in these days of specialization it is good to pause occasionally and examine the possible advantages of closer coordination among the specialists.

Wholesale producers, such as sugar manufacturers, manufacturers of edible fats and oils, producers of fresh fruits and vegetables, fish, poultry, and flavoring extracts form one group; another is made up of wholesale consumers, as makers of ice cream, bread products, meat products, while a third group consists of producers of preservatives and preserving processes.

All these interests might well profit by a carefully planned pooling of experiences and coordinating of activities.

The American Food Journal stands ready to sponsor all such movements and to help in their development.

FOOD AND HEALTH EDUCATION

A Department of The American Food Journal
Edited by WINIFRED STUART GIBBS

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Creating Home Interests in Springfield

How the Various Departments of the Public School System Work Together in Teaching Home Economics Subjects

By AGNES HOUSTON CRAIG
Supervisor of Home Economics, Springfield, Massachusetts

IN the Springfield public schools, home economics is taught in the fifth and sixth grades, the junior high schools, the high schools, the continuation school, and the night schools. Provision is made also in the junior college for certain courses when there is a call for them.

In planning and conducting the work, which is directed by one supervisor, there are several specific aims:

(1) To give school children a clearer understanding of the meaning and importance of the home and to stimulate a normal interest in it and in its activities.

(2) To invite on the basis of merit a better understanding and cooperation from parents, and through this means, to turn back into the home such responsibilities as properly belong there.

(3) To use to better advantage all fundamental training carried on in other departments of the schools and to secure active and continuous cooperation from such specialized departments as physical education, manual arts, nature study, commercial art, physics, fine arts, chemistry. We feel that all these departments have a contribution to make to the training of people in the art of living.

(4) To control the modern tendency to too much specialization and to a burdensome multiplication of subject matter in the curriculum. The group of articles submitted on these pages will show how this correlation is being built up and how great the opportunities for it are.

Agnes Houston Craig

Some of the beneficial results which we are already finding are:

(1) A better understanding and mutual appreciation between academic and special teachers.

(2) A relief from the pressure of much subject matter in the curriculum, because unnecessary repetition and duplication can be located and corrected.

We are putting much stress on this program of correlation to the end that we secure a better type of work, more interest from the students, and greater sympathy among teachers of various departments. For example, in health education we feel that several departments are concerned and that the problems involve teachers of physical education, home economics, science, civics, and art.

Although we have made only a beginning, we are looking forward to many interesting developments and much benefit to all concerned, particularly to the pupils themselves.

Home Economics in Junior Highs

Boys As Well As Girls Are Taught the Science of Home-Making in Springfield

Knights of the Kitchen

By MABEL F. CROWELL
Instructor, Forest Park Junior High School, Springfield

SHOULD you happen to visit Forest Park Junior High School at a time when the various school clubs meet, you would find (perhaps with much surprise) that boys—and not girls—are busy at work in the food laboratories. Undoubtedly you would wonder at this departure from your preconceived ideas of who-should-occupy-the-kitchen and your questions would form faster than your guide could answer them.

I shall try to tell you how this situation came about. Further to carry out the ideals of the junior high school organization, about two dozen clubs were formed this year in the school at Forest Park. Opportunity was given the pupils to join that club whose activity appealed to their interest. Whether it was through visions of camping trips, future careers as chef, prospective bachelor life, or the desire to understand the source of the mysterious good odors that come from the food laboratories I know not—but, at any rate, two hundred boys applied for membership in the Boys' Cooking Clubs! This number was overwhelming, and as accommodations were available for only two classes of about twenty boys each, a lengthy waiting list remains.

The clubs meet once every two weeks for a period of forty minutes. Because of so little time, only such recipes as can be quickly prepared are used. Occasionally, when something, such as cake, is especially desired, the boys meet after school hours for the lesson. Among the foods they have learned to cook are biscuits, potato soup, plain cake, meat loaf, stuffed and scrambled eggs, French toast, cocoa, Hamburg and bacon sandwiches, and hashed brown potatoes.

Our aims in presenting these lessons were to help the boys acquire skill in preparation of foods and to teach the proper selection of foods, having in mind the needs of camp life or perhaps an emergency at home. So far as possible, food values are stressed, but again the time factor enters in so that not a great deal of instruction can be given.

It seems almost unnecessary to say that these cooking lessons are heartily enjoyed. The doing of something, the cooking of something "good to eat" and then the eating of his own product—all this surely would appeal to almost any boy. From the time of donning aprons to the washing of towels and putting desks in order, the boys work in an energetic, business-like manner—even their sisters could not surpass them. They come to the laboratories with an interest which continues throughout the lesson and which, we hope, will remain with them through the days to come.

A boys' cooking class in Forest Park Junior High, Springfield

Relation of Art to Food Work

By LOUISE PATTEN
Instructor, Buckingham Junior High School, Springfield

EVERY ONE, consciously or unconsciously, has a longing to express herself in design in some form. All cannot be artists with brush or pen, not all are especially interested in clothing, house-furnishing or millinery, but there are few who do not desire to work out their love of the beautiful in some tangible form. Might not cookery offer an opportunity not found elsewhere?

For some time the application of art principles to table setting has been stressed in the schoolroom. Why should not this application be carried out in other lines, even to the preparation and arrangement of the food?

Few of our girls will ever undertake the intricacies of the caterer's art, but the principles of color, space, mass, subordination and rhythm could be of real value in the arrangement of the simplest daily meal.

An experiment was tried out in the first semester of junior high school with a lesson on peach compote. The teacher drew a circle on the board representing the dish upon which the pudding was to be served and a second circle to suggest the molded rice. Several different ways in which the peach might be arranged were sketched and then each child made a sketch of the arrangement she would like to make herself. The problem was formerly a difficult one for both teacher and pupil, but with this plan the children worked it out with ease and success. When the sketch was satisfactorily completed each child knew how her peach was to be cut and was ready to carry out the design. The results were remarkable in attractiveness and neatness.

When a luncheon having peach compote for the dessert was served, the pupil who prepared it voluntarily sat down and made a careful sketch, proving that she realized the help received from thoughtful planning.

The same idea has been carried out with older girls in the arrangement of salads, which gives untold opportunity for the use of applied art in color and variety of form. Class criticism is most helpful, especially in cooperation with the art department. If no other means for this cooperation offers, the most successful product might be sent to the head of the art department with a request for criticism of the arrangement.

The ability to judge is latent in most of us. A friendly discussion and criticism of one another's work will prove valuable and often suggestive and the children will gain in the ability to judge. A general discussion of this kind should likewise offer many suggestions, which the different members of the class could work out individually.

Appreciation of what is good must precede the ability to create that which is beautiful. This appreciation once developed, tasks which have been thought disagreeable or impossible may be achieved.

A Food Project for Junior III Girls

By JANET G. BANKS
Instructor, Central Street Junior High School, Springfield

LOCATION: Central Street Junior High School, Springfield, Massachusetts.

Time: Two lessons (of 90 minutes each) for twenty weeks.

Teacher: Janet G. Banks.

Object:

Immediate:

1. To develop in the girls an appreciation for the problems common to the majority of their mothers.
2. To help the girls apply their knowledge of foods in helping their mothers solve these problems.

Ultimate:

To help the girls solve their own present and future food problems, with greater ease, efficiency, and satisfaction.

Cooperation:

Mothers, supervisor of home economics, principal of school and other teachers.

Lesson 1. Introductory or inspiration lesson.

Aim:

1. To get from the girls the problems common to the majority of their mothers.
2. To discuss with them the ways in which they might help in solving these problems.

Classification of problems presented.

1. Meal planning, taking into consideration:
    a. Personal needs of members of the family.
    b. Season of the year.
    c. Time and help available.
    d. Equipment.
    e. Budget.
2. Marketing and buying.
3. Ordering, preparing and serving breakfast, luncheon and dinner.
4. The dining room.
    a. Daily care.
    b. Preparation for a meal.
5. The kitchen.
    a. Care of large and small equipment.
    b. Cleaning materials.
    c. Standardization of operations and equipment.
    d. Extermination of kitchen pests.
6. Special cookery for
    a. Small brother or sister.
    b. An invalid or shut-in.

Lesson 2. Nutritive value of the foods.

a. Carbohydrates.
  1. Function in body.
  2. Comparison of food values and cost of common foods in this group by 100 calorie portions.

Lesson 3.

b. Protein.
  Same points to be discussed as in (a).

Lesson 4.

c. Fats.
  Same points to be discussed as in (a).

Lesson 5.

d. Mineral matter and vitamines.
  1. Same points to be discussed as in (a).
  2. Comparison of food values and cost of foods in all the groups.

Lessons 6-7. Factors entering into meal planning.

a. Personal needs.

Lesson 8.

b. Season of the year.
c. Time available.
d. Help available.

Lessons 9-13.

a. Equipment.
  1. Making a fireless cooker.
  2. Using a fireless cooker.

Lesson 14.

f. Budget.

Lessons 15-16. Meal planning.

Lesson 17. Marketing and buying.

a. Visit to the butcher's.

Lesson 18.

b. Classification of information gained by visit. Revision of menu.

Lesson 19.

c. Visit to the market.

Lesson 20. Meal preparation.

a. Breakfast.
  1. Setting the table.
  2. Service for breakfasts.
  3. Mock breakfast.

Lesson 21.

  4. Preparing, serving, and cleaning up a breakfast, using same menu as used for mock breakfast.

Lesson 22.

  5. Breakfast with guests.

Lessons 23-25.

b. Luncheons.
  1. Setting the table, etc. Same points as under breakfasts.

Lessons 26-28.

c. Dinners.
  Same points as under breakfasts.

Lessons 29-30. Standardization of operations and equipment in kitchens.

a. Plans of home kitchen drawn to scale on squared paper.

Lesson 31.

b. Problem meal discussed and assigned.

Lesson 32.

c. Results of problem meal given and conclusion drawn.
d. Plans of home kitchens discussed in class.

Lesson 33.

e. Study of a well planned kitchen.
f. Rearrangement of home kitchens (on paper).

Lesson 34.

g. Report of problem meal prepared under standard conditions.

Lesson 35. Extermination of kitchen pests.

Lesson 36. Care of small brother or sister.

a. Feeding the baby.
  Milk and its value in the diet.

Lesson 37.

b. Clothing the baby.
c. Bathing the baby.
  Demonstration by nurse or progressive mother.

Lesson 38. Care of invalid or shut in.

a. Care of a bedroom.
b. Making a bed.

Lesson 39.

c. An invalid tray.

Lesson 40. Review of problems presented in first lesson: determination of problems children can now help solve.

Extra lesson. Picnic supper at Forest Park.

A careful sketch before cooking aids in making the dish attractive

Winner of the muffin contest in Buckingham Junior High School

A Muffin Contest

By MARY D. BANKS

Instructor, Buckingham Junior High School, Springfield

THE junior high school course of study in Springfield allows for a number of lessons on quick breads, and when the time comes to make biscuits and muffins, the little girls in the Junior I classes are delighted to take home the evidences of their handiwork. After a short study of flour and some experiments showing the action of leavening agents and the formation of carbon dioxide gas, the emphasis is laid on the preparation of batters and doughs and the use of individual ovens.

Naturally the girls show much interest in each other's products and at the end of each lesson there is much comparison and careful judgment. As a result, it was decided to repeat the preparation of plain muffins and to vote on the member of the class who worked most neatly and efficiently and whose muffins were best. This aroused great interest and the girls brought in reports of their practice at home.

The plan was carried out in several classes and led to a general desire to know the best of those chosen from the several classes. So it was decided to have a muffin contest between these girls. Junior III girls were chosen to judge and the six contestants were objects of envy and admiration among their schoolmates.

On the day selected there was an excited little audience in the kitchen at the close of school. The contestants had taken special pains with their appearance, as the crisp white aprons and clean hands bore witness.

The contest went off in fine style. In a surprisingly short time a dozen steaming, golden brown muffins were laid ready for inspection. The judges checked up their points in a businesslike manner and announced their unanimous decision in favor of Winifred, an eager little bobbed-haired girl, who was surprised and delighted with her reward, a set of muffin tins.

Solving a Thirty-Minute Problem

By A. BELL PETTY

Instructor, Myrtle Street Junior High School, Springfield

LAST semester when the programs were made out, a small group of Junior II-B practical arts girls had their foods work scheduled in such a way that instead of having two sixty-minute periods a week, as is usual, they would have one sixty-minute period and two thirty-minute periods on different days.

It is customary in our school system to spend the double periods in the study, preparation and serving of foods, as well as in general housekeeping; but it was a problem to know the best use to make of the single periods. The girls were not only young for the grade but were of foreign parentage and immature, and I realized that they had not sufficient background nor the ability to profit by any course in home economics unless it appealed to their interest.

After thinking over the problem, I decided to use the Practice House, in which the girls have a keen interest, as the basis for some project work.

When the plan was presented to the class they were much pleased and anxious to begin. It was voted that the planning, furnishing, and care of the kitchen should be the first problem. Keeping these aims in mind, it was decided that two standards were required when planning a kitchen; namely, spotless cleanliness and the

A cooking class in the food laboratory, Chestnut Street Junior High School, Springfield

The dining room in the Practice House, Myrtle Street Junior High School

comfort and convenience of the worker by the saving of steps and unnecessary labor. For furnishings: a harmonious color scheme; the most suitable finish for walls, woodwork, floor; material for curtains; convenient placing of range, sink, refrigerator, kitchen cabinet, kitchen table, cupboards and shelves. In connection with the range, sink and refrigerator, we emphasized construction and care. The selection of kitchen utensils and labor-saving devices were also studied.

When the kitchen project was completed, the bathroom was taken up. This project covered furnishings, including bathroom fixtures, wash cloths, towels, soaps, brushes, disinfectants and deodorants; some sanitary facts and principles; care of the bathroom.

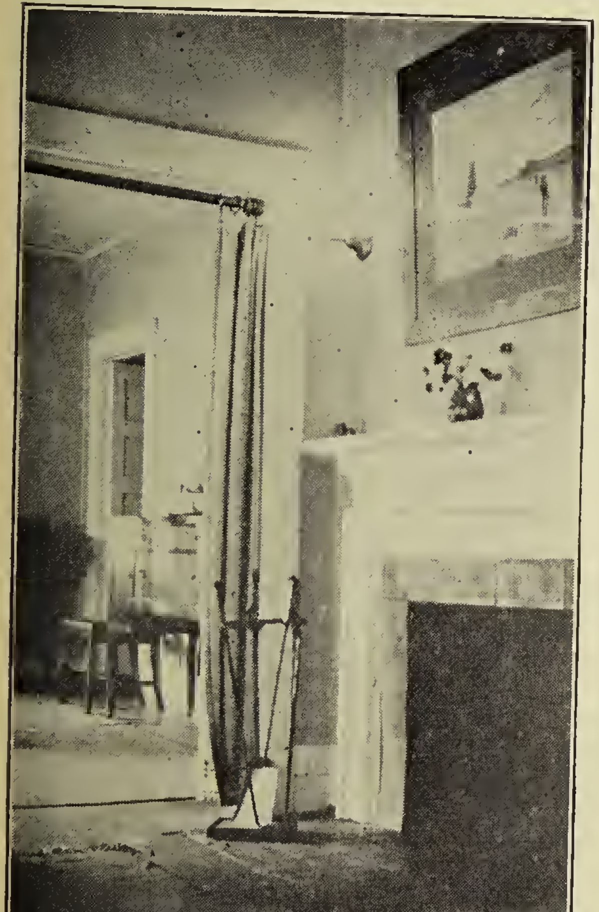
The foregoing projects brought us almost to the end of the semester, but there were still a few lessons left in which to take one more project. I thought perhaps the interest of the pupils might have waned, but when they realized there was an opportunity for further study, immediately one member of the class suggested a bedroom, while another wanted to learn about a cellar. We decided to study the former, because the furnishing of a bedroom in the Practice House is the project which, in correlation with the art department and sewing classes, is being carried out at our school this year.

As in furnishing the kitchen, all agreed that a harmonious color scheme was most necessary. With this in mind we discussed the treatment of walls, ceilings, floors, and windows. Under the topic of furniture we discussed good lines, construction, finish. We included bedding, covers, pictures, also daily and weekly care.

All of the material was written up in topical form and kept in note books. To make the notebooks more attractive and to maintain the interest of the girls in articles and pictures published on home furnishings, they were illustrated with pictures cut from magazines, furniture catalogs, and newspapers.

That the experiment has proved a success I feel sure, for when assigned to certain housekeeping duties at the Practice House, each girl goes about her work in a more intelligent way; and to judge from the questions that they have asked I know that it has helped to link the school with the home problems.

The following are suggested for reference reading in connection with this work: Kinne and Cooley, Foods and Household Management; Teachers' College Bulletin (Columbia University), Vocational Home-Making Education.



A view of the Practice House, Myrtle Street Junior High School

Senior High School Projects

School of Commerce Methods

By GLADYS F. PALMER

Director of Home Economics, High School of Commerce, Springfield

1. Food Stencils and How We Make Them Work

PERHAPS the first person to devise food stencils for use in home economics classes was Professor Lydia Roberts of the School of Education, University of Chicago. Fifty stencils were prepared to form a standard set, the price of which is fifty cents. We began with this list but have found it desirable to make a number of additions of our own. We paint, mount on cardboard, and cut out each food stencil, leaving a flap at the bottom of each for insertion into a slit in a small block of wood which acts as a support.

The art and stenographic departments of our school are correlating with us in this, and the manual training department provides the necessary blocks in which to stand our stencils. On the back of each food stencil we put the calorie value per portion and write the one or two words necessary to indicate the food value of each. For example on the back of the spinach stencil we write:

25 calories per serving.
Valuable for—
1. Iron
2. Growth Vitamine A
3. Roughage

One can readily see how numerous are the ways in which a set of such food stencils can be used in teaching nutrition.

They can be used in setting up exhibits when it is inconvenient to use real foods. They make it possible to assemble one hundred calorie portions, for example, or to arrange such groups of foods as those especially valuable for lime, or those containing the anti-scorbutic vitamine, or proteins.

They can be used in planning meals. Girls learn quickly to know which foods will supply their day's requirement of lime, phosphorus, iron, vitamines, roughage, proteins, and which have high and which low caloric value. They add, and subtract, shuffle, and exchange the stencils until the day's meals are planned to their satisfaction. The aim is, by means of the stencils, to picture an adequate diet. In this way, too, the color value of meals is easily visualized.

Muffin contest in Buckingham Junior High School

By working out, and writing in, the current price of foods per portion, in pencil, on the back of each stencil, the cost charts can soon be reckoned. If the class votes that the meals are too expensive cheaper foods may be substituted, provided the approximate food values are kept the same. The lesson is soon learned that foods that have all the required nutrients can be secured by the poor as well as by the rich.

When the girls have the stencils in hand they seem to recall more readily the various ways in which each food may be cooked and served. Discussions as to which are the better ways are a natural result. Recipes are voluntarily worked out or looked up, copied off and entered in a card catalogue which each girl keeps, and more frequent home cooking is reported. This encourages a much desired correlation between home and school.

The overweight girls take delight in assembling the group of foods from which they are going to eat more sparingly. And they are surprised to see how many are still left from which they can choose. The underweight girls line up their cups of milk, cooked cereals, vegetables, and butter, and form definite resolves to follow this new regimen.

These are only a few of the typical ways in which food stencils help to make the subject of nutrition more concrete and interesting. When students once learn how the stencils are used they eagerly proceed with the class exercise as though it were a game, and very little assistance from the teacher is needed.

2. How the Teaching of Foods Is Correlated with the Work in Other Departments in the High School of Commerce.

IT is true that the more the teachers of other departments in a school know about the home economics department in their own school the better they will understand the aims and the need of home economics education in general. This has been our observation.

Men teachers, working by our side, in business subjects, in English or history departments, and women teachers, too, busy with civics, music or art, knew but little of what girls studied in foods and clothing. What was that to them? It was only when we decided to outline our courses in an informal way in a faculty gathering that we first began to arouse real interest.

In that first faculty meeting two short talks were given, one by a foods teacher, and the other by a clothing teacher. Each used a great deal of illustrative material such as weight charts, calorie and vitamine posters, clothing budgets, showing, for instance, how a business girl can dress on one hundred and fifty dollars a year. These and other aids helped to make the talks as stimulating and inclusive as a few minutes would allow.

One immediate reaction was the giving by a member of the faculty of fifteen dollars to the department to present to the girl who made the greatest progress in the home-making subjects during the school year.

Other signs of interest were shown by more frequent visiting on the part of the faculty members, and much stimulating questioning. It was at this point that we said to ourselves, "Why not let the English department help us? And the art department, the physical training, science, manual training, and civics and music departments, too?" And this year it has been one of our objects to establish reciprocal correlations.

As a result, nutrition posters have been introduced into the art work. The stenographic department has taken our material for regular class-room practice, doing both mimeographic and stenciling work for us. The girls themselves have often typewritten their reports, or certain parts of their notebooks, and have worked out cover pages for themes. Occasionally a design in dots and dashes has been worked out on the typewriter.

The English department has included in spelling lists words commonly used in our work. We have suggested various theme subjects which cover phases which could profitably be treated in composition. Not only do such subjects as setting a table for a formal dinner become interesting to the English teacher correcting the paper, but the girl who wrote the paper finds interest in watching her teacher's reaction. Wouldn't you be interested in watching a rather stout man-teacher read a seriously written theme on "How I Can Help Get My Weight to Normal?"

The physical training department is very generous in letting us use the physical records of the girls whenever we desire them. And this department shares the use of the scales for our weight work. Our nutrition health program and their general health program go hand in hand.

The science department has found out what we would like our girls to know about pressure-cookers, thermometers, ice-cream freezers, evaporation, variations in cooking in various shaped saucepans, and other similar practical problems, and so puts special emphasis on them in a home science course. When elected this course is studied previous to, or simultaneously with, the work in foods. We encourage the girls to take this valuable and practical science course as a splendid background for home economics training.

The manual training department helps out in making blocks for our food stencils, and in providing various other small equipment.

The music department furnishes piano and violin music or as many orchestra pieces as we choose when we give a school club, faculty, or Woman's Club party.

In these various ways, then, we have enlisted the services of all the departments in the school. With this cooperation has come broader sympathies and a better appreciation of the vital need of home economics training in a general high school course.

3. The Relation of Illustrated Books, Charts, and Posters to the Teaching of Foods and Nutrition in the High School of Commerce.

WHEN we are attending a series of lectures on Home Decoration we all know how many more art principles we can grasp if a great deal of illustrative material is used. We want to see samples of real curtain materials and hangings, various types of wall papers, floor coverings and pictures and furniture. We see them combined in various ways. And by actually trying them out we learn not only what is artistic and fitting but why it is so. It is just this process of visualization and of handling of materials that crystalizes many a principle. If this is so for us surely it will be for the young girl. So we should allow her class time to handle as many materials and try out as many effects as possible. Her own posters and illustrative material will mean much more to her than the teacher's.

Illustrated Books and Charts

In the young girl, too, the collective instinct is something which can also be used to great advantage. She likes to collect and cut out pretty pictures of fruits, vegetables, beverages and desserts. The magazine advertisements of today, plus a few seed catalogues, give material enough for all. But what is she to do with all these pretty pictures? It takes only a little directing to show what a worth-while book she can build. Such a book not only comes to mean a lot to her but to her younger sisters and brothers at home. And perhaps her mother, too, absorbs many of its lessons.

There are various ways to develop such nutrition picture-books. Chapters may be written with headings such as these, "Feeding Our Year-Old Baby Brother," "Feeding My Little Sister Who Is Underweight," "What My Over-weight High School Chum Should Eat," "Feeding My Athletic Brother," "What My Mother Should Know About Feeding Us All," "What My Mother Can Feed Us That Will Be Cheap But Still Nourishing." These chapters are developed by a series of pictures, but paragraphs of explanation, or simple labelings, supplement the pictures. Running all through the book is the story of the simple food needs of different people at different ages, under varying conditions. Girls make up their own headings for their chapters and the chances are that most of their chapters will help to answer some, at least, of the questions that arise in their own families.

Another scheme for these illustrated books, which we are trying out, is to pass out mimeographed sheets with headings such as the following:

"How Can I Be Sure of Getting My Daily Requirement of Lime?"

By eating—

1. (Picture)
2. "
3. "
4. "
5. "

Then the girls picture the answers on these various mimeographed sheets. We have specialized on the mineral and vitamine sheets, thus far, but are now gradually adding others, such as The Roughage Chart, The 100-Calorie Portion Table, The Table Showing the Number of Calories Per Serving of Various Common Foods, The Complete and Incomplete Protein Tables.

Instead of using the mimeographed sheets the girls may use the gummed letters and make headings for their own sheets, following the idea of the large charts made for class-room illustrative material. The larger charts for class use have, up to this time, been prepared by teachers but in the future these also will be made by the students.

A table which works out well in chart form is that showing the general trend of prices, headed something like this:

Foods Which Are Cheap (considering Food Value).

Foods Which Are Moderate in Price (considering Food Value).

Foods Which Are Expensive (considering Food Value).

With such lists in mind the economic phase of meal-planning is made more simple.

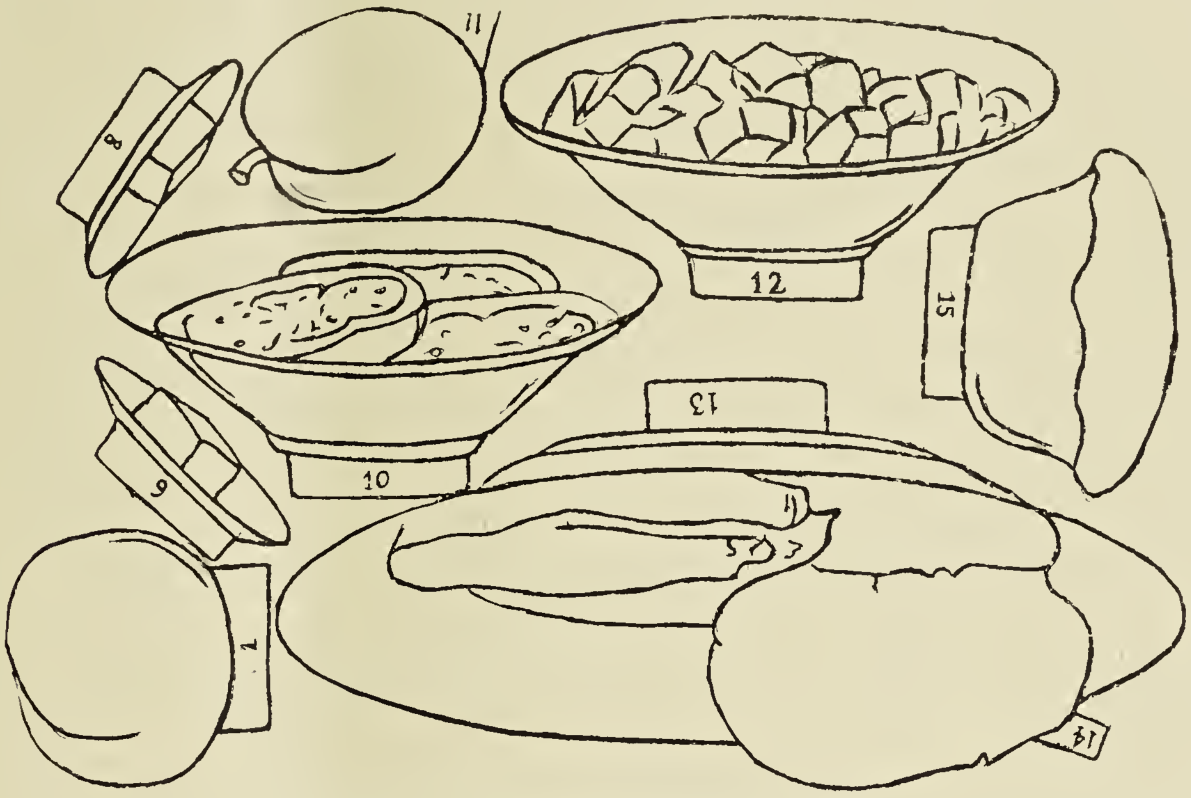
Posters

In addition to the making of large charts for class illustrative material and the smaller personal nutrition picture books the working out of nutrition and health posters is fast growing in favor. The girls readily suggest splendid subjects, present them in the foods class, and, before many weeks, come in with their finished posters, worked out under the supervision of the art teacher.

The completed posters, in most cases, are presented to the home economics department and thus our permanent collection steadily grows. In the early weeks of our work these posters form an invaluable aid in stimulating interest.

When we hold exhibits for the mothers, or for teachers' associations, we have something definite and worth while to present. They not only show the development of our own subject but also the correlation with other departments in the school The pictures of a few samples of charts and posters, already in use, are included in this issue, the photography being done by the science department of our school. Some of the subjects of posters now in the process of construction are:

1. "Who's Who in the Vegetable World.".
2. "Who's Who in the Fruit World."
3. "Follow the Milky Way."
4. "Mileposts on the Road to Health."
5. "The Health Squad."
6. "Finding Their Way (Weight)."



A food stencil used in the High School of Commerce

4. Projects and the Project Method of Teaching Foods as Developed in the High School of Commerce.

It is very true "that the stuff of education must be made up of the stuff that makes up life." When girls can feel the relation of a problem to their own living they have an incentive to begin with. Eagerness and enthusiasm then follow quickly and the situation immediately becomes the concern of the pupil herself.

It is one of our aims to provide as many of these life situations as possible. It is gratifying to see how the girls, unknowingly, are meeting this changing idea of education. A great deal of our daily teaching of foods is done by the "family method"—really a project method—which is described in another article in this issue.

Among other projects which have naturally grown out of our practical activities we might name the monthly faculty tea-parties, the occasional preparation of faculty luncheon trays, the monthly preparation and serving of tea and cakes to the Federated Woman's Clubs in the attractive school club-room. Then there are the Christmas gift boxes, packed with jellies and conserves, plum puddings and candies, with sprigs of holly tucked in among the red frilled tissue paper, to give the Christmas touch. In the warm days in June certain "families" formed of groups of girls in the foods classes, pack lunch baskets and go off for a hike and an outdoor supper-party with their foods teacher. This outing they have earned. For early in the course, when meal-planning, preparation, and serving were introduced, this was the reward held out for the family that had the highest score. The averages of the marks from all the meal score-cards, kept by each family, were compared.

Our girls have the advantage of being called upon frequently to serve at banquets and dinners given by the dietitian who has direction of the lunchrooms of the four high schools. These banquets vary in size, and in degree of formality, and so contribute much in giving the girls wider experience.

Occasionally there are refreshments to prepare for the various school-club parties, or for the Home Economics Club social gatherings. Such occasions help out in the social training of the girls, so often only lightly touched upon in the otherwise busy day.

Often it is a surprise to faculty or Woman's Club members to find out how such a large tea party can be given so easily and so successfully. When we serve sixty or seventy we make our tea according to rule, with the only exception that it is much more concentrated. We put one tablespoonful of this tea in each cup when making our other preparations. Then at tea-time we fill the cups with freshly drawn, freshly boiled water and the tea is always of the right strength and color, and is always hot. The helpers pass lemon, cream and sugar, sandwiches, cookies or small cakes, and the tea-party takes care of itself. The girls wash and put away all the dishes, which seems as natural to them as preparing the tea.

In this way our sixty-five teachers are able to get together, socially, for half an hour preceding the regular monthly faculty meeting. It is a happy way for the home economics department to show, in part, its appreciation for the loyal cooperation of the teachers and principal. At the same time it affords opportunity for real practice that students thoroughly enjoy.

The Family Unit as the Basis for Nutrition Study

By IRENE PALMER

High School of Commerce, Springfield

OUR students are girls who must become wage earners for a few years but are future home makers. Our problem is — How can we give these girls physical breadth, mental width, and spiritual depth for the development of future efficient citizens. We believe the family to be the natural social unit for teaching home economics. How is the average income going to house, clothe, feed, educate, and amuse the average family of Springfield? The food problem is worked out in our nutrition classes. How can I spend the least money and get the best food to keep every member of my family one hundred per cent efficient?

We decide upon the size of the average family as represented in our school and the class is divided into families. Each group is allowed to choose a name. We find Longfellow, Hoover, Harding, and Coleridge favorites. Each girl chooses a name and age according to her choice of family, which often means cooperation with the history and English departments. Every Longfellow family must have a "brave Alice, laughing Allegra, and Edith with golden hair." Sometimes, however, we are forced to use fictitious names. Each group chooses an occupation and income for the father of its family. Here we depart from the historical because this modern Henry Wadsworth must assume an occupation and income which is average to the members of the class. He may be a shop foreman or a street car conductor.

Of course in these classes we are to study nutrition but all home problems are so closely related we discuss standards first. Where shall this family live? How large a house do they need? What are their necessities? What are their luxuries as based upon their income and education?

Food Value Chart

			Mineral			Vitamines							
Food	Amt.	Calories	Lime	Phos.	Iron	"A"	"B"	"C"	Protein	Carbohydrate	Fat	Cellulose	Cost
Milk	1 qt.	675	*	*	a	*	*	*	*	a	*	o	$.14
Oatmeal	1 lb.	1800	a	*	*	*	*	*	a	*	a	*	.05
Orange	1	100	*	a	*	*	*	***	o	a	o	*	.05
Spinach	1 c	20	*	*	***	***	***	***	o	*	o	*	.15
Carrots	2 med.	100	*	*	**	**	*	*	o	**	o	*	.04
Butter	1 lb.	3500	a	a	a	***	o	o	o	o	**	o	.58
Sugar	1 lb.	1700	o	o	o	o	o	o	o	***	o	o	.09
Beef	1 lb.	900	a	a	a	a	*	o	**	a	**	o	.42

x, indicates large amount present; a, medium amount present; *, very small amount; o, not present at all.

All the food is divided into their natural classes, as fruit, vegetables cereals. These are grouped as the fuel, the building, and the body regulating foods. The importance, source, composition, and use of each in the body are discussed. Why, when, where do I get my daily lime, vitamines, iron, roughage, fuel? How shall I choose food for breakfast, lunch, and dinner? The forming of menus is studied. One family will suppose one of their children is underweight, another overweight, and such problems are solved. The girls keep a list of everything they eat for a week and check whether they are getting the correct variety of food. We have found the mothers quite willing to cooperate and often the girls will adopt correct food standards when they realize the relation of food to health and good looks.

Relative cost is worked out. Are the most expensive foods necessarily the best? We compare food as to composition, cost, and nutritive value in the accompanying chart.

The girls learn manipulation and service of simple dishes before a meal is attempted. They become acquainted with the calorie and compute their own calorific requirement and check with actual food eaten.

With this background they begin their meal service. A score card is used and carefully discussed in the beginning, each girl being assigned a certain portion of the actual judging. We have been using the score card as given by Catherine Bryden in the January issue of "The Journal of Home Economics."

The children must purpose, plan, execute, and judge the whole problem. The family, working as a unit, discuss their food requirement and plan the menu. The work of checking calories, making the grocery and price lists, assembling recipes, planning the work schedule, diagramming one cover and listing dishes to be used is divided among the members of the family although a complete report is required from every member. Time, fuel, number of utensils and condition of the unit kitchen during process of preparation are checked. Each family is allowed one or two guests. The duties of host, hostess, children of the family, including table conversation are discussed.

This basis of work leads to cooking in family-sized quantities and doing away with the old time bugbear of individual recipes. We find the girls enthusiastic and eager to cooperate in order to obtain the best results in the shortest time.

Did You Eat Cereal for Breakfast?

By OLGA GRIZZLE
Instructor, Central High School, Springfield

LESS than one-half of the families represented in the food study class at Central High School regularly used cereal breakfast foods.

The chief reasons given for this were, "We don't care for cereal," "Cereal uses so much milk," and "Oatmeal and the uncooked breakfast foods take too long to prepare."

Not many of the students could tell why they did not like cereal, but all agreed that no one relishes the flavor of food that has been scorched or burned by cooking it next the fire in order to prepare it more quickly. Neither is undercooked cereal food palatable. Nor were the lumpy, the too thick, and the too thin varieties thought appetizing.

One or more of these conditions frequently existed and cereal "just right" was not the usual rule.

How to prevent scorched cereal brought forth discussions of the use of the double boiler and the fireless cooker.

Such questions as why cereal lumps and how to avoid this reviewed composition and food value of cereals, effect of heat on starch, how to separate starch grains, the making of white sauce and cornstarch pudding, were discussed, until a method for cereal was developed.

Proportion of "breakfast food" and water was next considered. Recipes in the various textbooks and cookbooks and those on the cereal packages were compared. Experiments were carried out to determine which of these gave the most satisfactory results.

The kind of the cereal—granular or flaked; dryness of cereal, amount of evaporation of liquid in cooking, individual preference, and other factors affecting the proportion of liquid were considered.

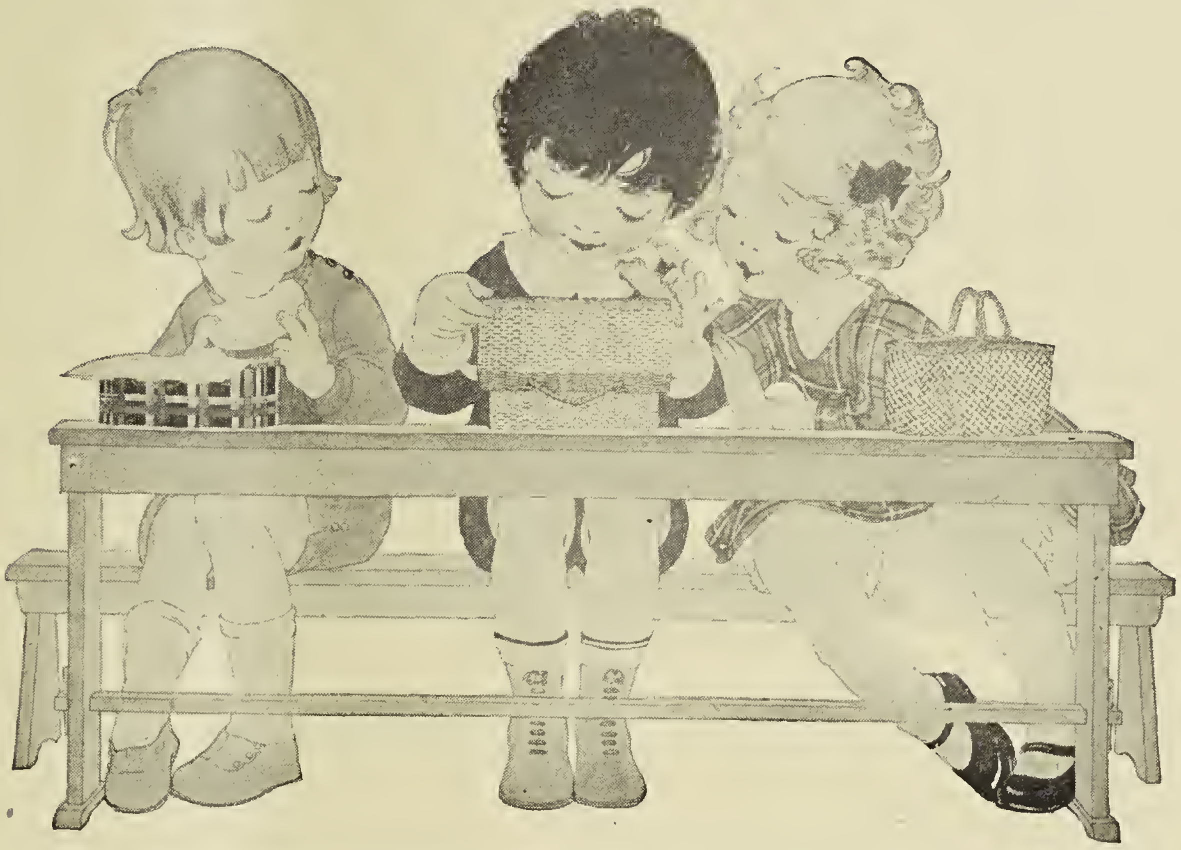
Length of time required for cooking entered into the experiments. It was decided that a greater proportion of water and long (two or three hours') cooking made the cereal more palatable and increased the bulk.

The use of the fireless cooker, of the pressure cooker, and the cooking of the cereal in the double boiler the evening before were subjects for experimentation and discussion.

The serving of the cereals led to class discussions of breakfast menus and the part of the cereal in supplying the required food value.

Of course the cleaning of the cereal cooker, the use of left-over cereal, and the care of cooked and uncooked foods of this type received their due attention.

The cost was an interesting subject. Of this feature, several phases were



Luncheon and Sandwich Suggestions from Educational Department, Royal Baking Powder Company, New York

THE SCHOOL LUNCH BOX

IT IS perhaps well to remember that "regular eating at regular times," whether at home or at school, is a good habit to form.

The Little GINGERBREAD MAN

ONCE on a time there was a King
As cross as any bear,
He shook the cook and often took
A handful of his hair!

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Mouth Hygiene

FOR

School Children

BY

Alfred S. Fones, D. D. S.

Director of the Division of Dental Hygiene, Board of Education, Bridgeport, Connecticut.

This book discusses the diet essentials in the building of firm, dense teeth. Dr. Fones believes that dental caries may be prevented by proper attention to the diet, and that school children may be taught to like foods that will make strong teeth and healthy bodies. He urges that children be taught to eat such natural sweets as figs, dates and raisins, real molasses, honey and pure maple syrup.

The most carefully selected food, however, will harm the teeth if allowed to remain on their surfaces. Dr. Fones tells how children may be taught to care for their teeth, and gives directions for a toothbrush drill for school classes. His booklet contains other material of great value to dietitians and home economics workers.

Handbook Series

Price twenty-five cents

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considered, as packages differing in size, package versus bulk, amount of prepared and unprepared according to weight, place of purchase.

Some stores were found to charge from two to eight cents per package more than others. This discovery brought up the economic conditions affecting the cost. What does a consumer pay for when she buys? Does she pay more than she should for what she gets? These were questions that brought temporarily a few puzzled wrinkles to youthful brows.

Tables were made showing cost per pound, number of servings per pound, cost per serving, fuel value per serving, and cost per 100 calorie portion of ten of the more commonly used breakfast cereals.

Each student calculated the amount of cereal sufficient to serve her family, amount of water and salt, and the cost. She was urged to test her calculations by preparing the cereal for a breakfast at home. This was done in many instances showing the interest of the student. One girl reported that she now knew what made their rolled oats "sticky." She had seen her mother stir it frequently while it was cooking.

Another discovered that her grandmother was using the most expensive package cereal and getting fewer servings to a package than she should because a small proportion of water and a short time for cooking were allowed.

An entirely new point of view has been developed in the minds of these girls, and reports show an increased use of cereal foods because of understanding of them.

The Senior Course in Household Management

By A. CARO BALCOM

Instructor, Technical High School, Springfield

1. Finances of the Family

THE household management course in the Technical High School is given during the senior year. The time allotment is twenty weeks with five forty-five minute periods per week. The course begins with the division and use of the family income; then the development of a personal budget through personal accounts. The girls make their own plan for tabulating the spending of their allowance, the only stipulation being that they must have a division for savings, candy or luxuries and that the accounts must balance. The natural divisions are such as come within the experience of a school girl; lunches, gifts, carfares, amusements, savings, health, clothing, amount received and amount disbursed. Neatness and accuracy are stressed. At the end of a month the account books are carefully corrected by the instructor and then discussed with each girl. From this time a marked improvement is seen in the expenditure of their allowances. Using these personal accounts as a basis the girls work out their own budgets.

The students are taught how to open a savings bank account and a deposit account. Also how to make out and endorse a check.

2. Planning Ideal Kitchens

ANOTHER interesting topic is the study of the kitchen. Through discussion the points of an ideal are developed; exposure, size, location in relation to the dining room, equipment and placing of same. Home kitchens are drawn to scale, and furnish topics for class study. Then follows the working out of a plan for each girl's ideal kitchen. This leads to a discussion of equipment, including laborsaving devices, lists of which are made with the prices, the total cost not to exceed a stipulated sum.

3. Economy in Buying

THE girls are taught that they are the purchasing agents of the home, that it takes thought and intelligence to purchase for the needs of the family by wise expenditure of the family income; that buying is a science and like any other science is based on knowledge. To acquire this knowledge a study is made of package foods. Labels on different brands of packages, canned or bottled products are studied that they may learn how to protect the family from adulteration, fraud, short weight and unsanitary handling of food products. Each girl makes a list of foods she thinks it would prove valuable to study. The brand, cost, and amount contained in each size package is listed; from this list a plan for tabulating this information is worked out by the group or proje method.

The different plans are presented for class discussion and the following has been adopted:

Baker's Cocoa

Large size ½ lb. Cost 22c. Rate per lb. 44c
Small size 1-5 lb. Cost 13c. Rate per lb. 65c
Save per lb. by using large package....21c

One student worked out a little different scheme for tabulating the cost of prunes. She purchased one pound of 20-30 and the same of 50-60 prunes. Removing the pits from each grade she weighed them, making the discovery that there was a loss of 10 per cent in the weight of the pits in the 50-60's, the pulp costing 16 5-8 cents; the pulp in the 20-30's costs 32 13-16 cents. Her tabulation showed the 50-60's to be the better purchase.

Size 20-30s	1 lb.	Cost 35c
Pulp	15 oz.	" 32-13/16c
Pits	1 oz.	" 02-3/16c
Size 50-60s	1 lb.	Cost 19c
Pulp	14 oz.	" 16-5/8c
Pits	2 oz.	" 02-3/8c

Gain of 16-5/8c in purchase of 50-60s.

4. Efficiency in the Household

ANOTHER interesting unit is planning the schedule for running the household. The girls begin by thinking of the things to do day by day, then of those that have to be done once a week or month. The time required for each household task is estimated and divided in such a way as to allow not only for work but rest and play as well.

The aims of this course are to awaken an interest in the business of home-making; to create in the girls an appreciation of the importance of it as a profession. Again I will quote from one of my girls who says: "A girl whom I know graduated from a high school in which no home economics was taught. In a short time she married. She has become a good cook but spends too much money and too much time doing her household tasks without getting the best results. When a girl takes home economics at 'Tech' she learns how to become a homemaker, and knows how to go about doing her household tasks. In other words, she knows how at the very beginning and does not have to learn how through several years of married life. I have seen unhappiness in the home and even homes broken due entirely to the mother's lack of knowledge."

Lessons on Utensils in Continuation School

By MRS. MARGARET ELLS

Director, Girls' Division, Continuation School, Springfield

WE have ffound by actual experience in our food classes that girls do not know the ordinary kitchen equipment. They cannot give the correct names of common utensils. For example, when a girl has been asked to get a potato ricer, a mixing bowl, or spatula, she will look through all the cabinets, and come back with the answer, "It isn't there," simply because she doesn't recognize the article.

As we visit the homes of our continuation school girls, and note the meager equipment for cooking meals for a family ranging from five to fourteen people, we cannot help wondering how they can have properly cooked and nourishing food in a few worn out saucepans and kettles? These girls between the ages of fourteen and sixteen years are not only a powerful influence in aiding their mothers to choose better equipment, but will also be prepared to choose more wisely for their own homes, and as a result have happier homes, because of properly cooked food.

There would be better prepared meals and healthier people if women and girls knew how to care for cooking utensils properly and would do so.

Because of the needs of our girls in connection with work on foods, the following lesson was given on kitchen utensils.

Aim:

1. To acquaint girls with kitchen equipment.
2. To select utensils that would be suitable in the ordinary home.
3. To learn the use and care of the various articles of kitchen equipment.

Clippings were obtained from magazines on different kitchen equipment and letters were written by the girls to the manufacturers for booklets and exhibits of educational value.

Materials were obtained from the Science Museum showing the mineral sources of kitchen utensils.

Discussion involving the history of kitchen utensils from the primitive method of roasting by means of a stick over the open fire, to the present day electrical equipment. Primitive utensils, such as Indian baskets and pottery, were borrowed from the Science Museum to show articles used by our ancestors.

Newspaper clippings advertising sales of kitchen utensils were used for illustrations and prices.

Class discussion of the different materials used in the manufacture of kitchen utensils including sources, process of manufacture, characteristics, advantages and disadvantages, use, cost and history.

Practical talks were given by Mrs. Best, employment manager of Meekins, Packard and Wheat on the store point of view of kitchen equipment. The talks included different makes of kitchen ware, points to consider in buying, and what to expect and what not to expect of a store. Why we pay different prices for different grades of aluminum, enamel ware, and other materials. Mrs. Best's talks were illustrated by kitchen utensils loaned to the continuation school.

From the talks, advertising material and school equipment, each girl listed the necessary utensils for the average kitchen.

Then a practical kitchen equipment exhibit was arranged according to the lists made by the girls. Some of the utensils were obtained from the school equipment, others were borrowed. This equipment was chosen not only to show the different articles, but to show the different makes of the various utensils.

Malnutrition is constantly undermining your teaching efforts

MALNUTRITION among American school children is a subject that is rapidly becoming a serious issue. School and health authorities have been fighting it for years, but the condition remains alarming. They estimate that one in three school children is undernourished — about 6,000,000 of them altogether, from average American homes, too.

The teacher can do more than anyone else to help fight this menace. Start nutrition classes in your own school. Your influence on the child's health life is very important. You will find that your children's record and conduct will improve amazingly if their health habits are improved.

Do you know how to go about taking this important step? Write to the Nutrition Director of the Borden Company for advice and suggestions. She will gladly help you free of charge.

The Nutrition Department of the Borden Company has been conducting careful experiments among malnourished school children for the past two years. Over 500 malnourished children have been observed. The results of the experiments show that with the proper observance of health rules and the addition of Borden's Eagle Brand Condensed Milk to the child's daily diet, malnutrition can be overcome or prevented.

Eagle Brand is so valuable in the treatment of malnutrition because it is pure, whole cow's milk combined scientifically with sugar. It contributes vital food elements which the child's body craves —body building material, growth promoters, and energy material. Millions of healthy babies owe their vigor to Eagle Brand; it will do exactly as much for the older child when properly fed and combined with normal health rules.

Begin with "Twenty Suggestive Lessons"

If you would like to begin health classes in your school in the fall, send for "Twenty Suggestive Lessons for Nutrition Classes." This little book is a manual of how to conduct such classes. It has been used by the Borden Nutrition workers themselves in public school work. With the aid of this little volume you will find it easy to conduct these classes.

Other interesting health literature which should be of vital service to you is published by the Borden Company. Check off those you would like and send in this coupon today.

The Nutrition Department,
Borden Company,
Borden Bldg., New York.

Please send me literature checked:
___Keeping Your Child Fit
___The Adolescent Girl
___Health Records
___Height and Weight Charts
___An Interesting Experiment with Malnourished Children
___The Milkarpie Stories
___Menus for Little People

Name ______________
Address ______________

ALL ARE FREE

Related English:

A. Oral—The following points were discussed:

1. What are the different materials used in the manufacture of kitchen utensils?

2. Name articles made of aluminum, earthenware, wood and other materials mentioned.

3. Japanned ware is varnished tin ware. Could we use it for a double boiler?

4. Galvanized iron is sheet iron coated with zinc. Food cannot be kept in galvanized iron as zinc forms poisonous compounds with certain foods. For what purposes will galvanized utensils be used?

5. What material would you choose for the following and why?

Article

1. Double boiler
2. Baking dish
3. Teakettle
4. Frying pan
5. Measuring cup
6. Mixing spoon
7. Roasting pan
8. Sauce pan
9. Muffin pan
10. Garbage pail
11. Chopping bowl
12. Coffee pot
13. Pie plates
14. Sink strainer
15. Water pail

Materials

Aluminum or enamel
Pyrex, earthenware, enamel or aluminum
Aluminum, enamel or iron
Iron, enamel or aluminum
Tin, aluminum or glass
Wood, iron or aluminum
Aluminum or enamel
Iron, tin or aluminum
Galvanized iron or tin
Glass or wood
Aluminum, enamel or tin
Glass, tin or enamel
Aluminum, tin or enamel
Enamel, wood, paper or galvanized iron

B. Written — Girls were asked to write on ten of the preceding questions which were discussed orally.

C. Spelling — The following words grew out of the oral English discussion, and were used not only for spelling drill, but for correct use in sentences.

equipment
enamel
ore
advantage
aluminum
galvanize
casserole
cast iron
economy
durability
disadvantage
utensil
surface
coating
chopping
nickel
earthenware
steel
lacquer
clay
spatula
corer
moulding board
strainer
sieve
colander
griddle
broiler
percolator
container
trade-mark
label
bail
material

D. Oral Reading — From booklets secured from manufacturing firms of kitchen equipment.

Related Arithmetic:

1. Find the total cost of the equipment planned for the average home. (Prices to be secured from sales slips of articles purchased for school use, newspaper advertisements and stores.)

2. From the following data is it a saving to buy at sales?

Article	Regular Price	Sale Price	Saving to Customer
1. Garbage can	$1.25	$0 89	
2. Canister set	2.98	.78	
3. Set of bowls	1.35	.98	
4. Set of sauce pans	1.25	1.00	
5. Teakettle	2.23	1.78	
6. Kettle	1.10	.98	
7. Sink strainer	.75	.68	
Total Saving: Prove your answer.			

3. Find the cost of

2	Double boilers @	$2.25
1	Teakettle @	2 23
2	Cake racks @	.50
2	Kettles @	1.10
2	Sink strainers @	.75
12	Dish pans @	.68
	Total	
	10 per cent discount for cash	

4. Find the cost of

1	Coffee pot @	$1.65
1	Tea pot @	1.65
12	Paring knives @	.25
12	Mixing bowls @	.30
12	Strainers @	.28
12	Spatulas @	.12
	Total	
	10 per cent discount for cash	

Related History:

Primitive History

Forerunner of broiling — holding meat on a stick before a fire (Indians).

Grain ground between two stones, roasted among the ashes (Egyptians).

Bags made from hides of animals, and baskets of grass were used for cooking. Hot stones dropped into the water caused it to boil (Indians).

At the present time in Mexico and some Oriental countries cooking is done on hot stones and in baskets.

Advancement of civilization meant introduction of pottery and metals.

Early New Englanders cooked over open fires and with this begins the use of iron utensils. The early utensils were large, had legs and long handles. Why?

Change of utensils with the introduction of stoves about 1800. (Stoves used in France as early as the fifteenth century.) Benjamin Franklin invented the famous Franklin stove. Give brief sketch of Franklin.

In the middle of the nineteenth century coal ranges were manufactured, changing cooking utensils once more.

The two most recent changes: gas and electricity demand still different

Kitchen utensils used in teaching food classes in Continuation School

A Special Offer to Teachers of Home Economics

⁂

¶ We have a few copies of recent issues of FOOD AND HEALTH EDUCATION containing many suggestions on class room work in food and health instruction which we will send FREE to any teacher who sends a subscription for one year beginning with the September issue.

¶ The subscription price is One Dollar a Year. Send One Dollar at once and we will not only send you the paper for a year, but will send three extra copies — fifteen months in all.

¶ To take advantage of this offer your subscription must be received at once as the supply of extra copies is limited.

Address:

Food and Health Education

37 WEST 39th STREET

NEW YORK

Valuable for Growing Children

SCIENTIFIC investigation proves that Knox Sparkling Gelatine is highly beneficial for growing children, because it contains 5.9 per cent of the growth-promoting amino acid Lysine.

A new and delightful way of giving this valuable element to the growing child is in a spread for bread, easily and quickly made with

KNOX SPARKLING GELATINE

Mother's Gelatine Spread

2 teaspoonfuls Knox Sparkling Gelatine
2/3 cupful orange juice A few grains of salt
3½ tablespoonfuls juice from orange peel
1 cupful Karo Syrup (Red Label) or any Crystal Clear Syrup

Soak gelatine in strained orange juice for ten minutes. Set cup containing this in boiling water. When gelatine is dissolved remove cup from hot water, stir in syrup, salt, and liquid from orange peel Make the latter by shaving off the yellow rind of ½ orange (do not use the inner white part), add 1/3 cupful water; cover and boil about 10 minutes. Drain and use this liquid for the delightful tang which it gives.

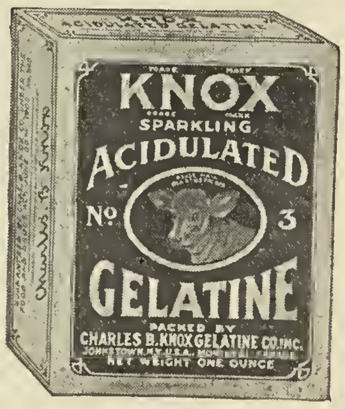
This is one of the most beneficial foods that a child can eat. Besides the health-giving value of the orange, nature gives Knox Sparkling Gelatine valuable properties that promote the healthy growth of children. This has been proved by scientific investigation, and besides, physicians will tell you that gelatine has a colloidal action that aids the digestion of many other foods.

Other Recipes Sent Free

Mrs. Knox's books, "Dainty Desserts" and "Food Economy," contain hundreds of other recipes for all kinds of delightful dishes. Sent free, on receipt of 4c to cover postage.

The Charles B. Knox Gelatine Co.
111 Knox Ave., Johnstown, New York

Plain for general use. The original unflavored, unsweetened package.



The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

utensils. An iron kettle is as out of place on an electric range as an aluminum sauce pan would have been in an open fire.

Related Geography:

Teaching lesson—maps used.

From what sections of our country do we get iron? Locate on map.

The iron ore is taken to the coal section for smelting. Why is this done? Locate Great Lakes, and Pennsylvania coal fields.

The greatest tin supply of the United States comes from the Malay Peninsula. It is known as "Straits Tin." There are also ancient tin mines in Cornwall, England. Locate these places.

Tin coating first done in Bohemia, then from England to the United States. Originated in the United States at Berlin, Connecticut. Locate Bohemia and Berlin, Connecticut.

Related Hygiene

Kitchen utensils must be kept clean in order to lengthen the life of the articles and the life of the individuals who are using them.

Carelessness results in cracked enameled ware. Enamel is a form of glass. We are very careful not to mix pieces of glass with our food, and we should be careful not to get enamel chips into our food. If the surface of an enameled dish is cracked, discard the dish.

When we open a tin can the contents are emptied into a dish, because some foods react with tin. Would you choose a tin plate as a container for food? What would be correct?

Wood absorbs liquids and odors. A chopping bowl has been used to chop onions. After using the bowl what will you do with it, to keep it in good order?

Cracked dishes should not be used. The surface chips off, and sometimes the dish breaks unexpectedly, cutting the individual who is using it.

Iron that is kept clean and dry is satisfactory, but we do not want rust in our food.

In our work with foods we find that milk should not boil. What utensil heats milk, but does not allow it to boil?

Importance of a garbage pail—a container for waste food. Garbage pails should have covers. How to keep the garbage pail clean.

Use plenty of hot soapy water to wash kitchen utensils. Scour them if necessary with some good scouring powder. Rinse thoroughly with hot water. Dry well with a clean towel. Store utensils in a clean place, that will keep them free from dust.

Have dishes for pet animals to eat from. There may be food left in a saucepan that is for the cat, but the saucepan does not belong to the cat.

Care of dish towels and dish cloths.

Babies and small children should not use kitchen utensils for playthings.

Conclusion: Buy utensils that are in perfect condition, and then keep them perfect. This is done by careful use and by keeping them clean and dry.

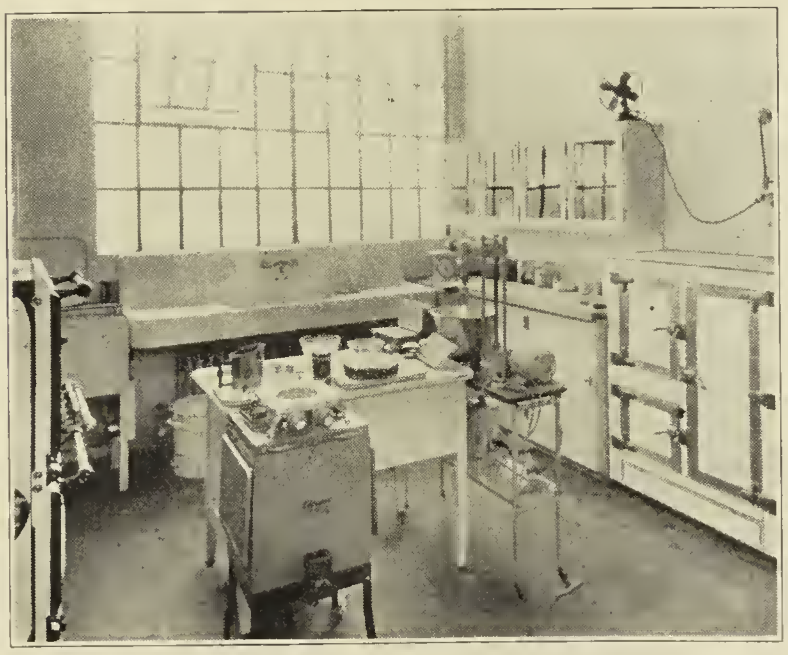
Open Air School Work in Springfield

By **DOROTHY EDWARDS**, and **EDYTH STRUMPFLER**
Instructors, Grades I-VI, Howard Street School, Springfield

THE open air classes serve two big purposes. One is to give children of poor physical condition an equal chance for an education. The second is to overcome their physical handicaps by food education and by forming habits of right living.

Most of the children in these classes are suffering from malnutrition, anaemia and nervous disorders. The age of the children ranges from six to sixteen years. The length of time spent in open air varies from a few months to several years, depending upon the child's condition. The average weight increase per school year is six pounds.

A REAL EDUCATIONAL SERVICE



All recipes that are recommended by the Calumet Baking Powder Company are prepared and thoroughly tested by experts in this well appointed and sanitary kitchen, maintained by our Home Economics Department.

The Home Economics Department was established to offer a more complete educational service to the teacher, student, dietitian and food manufacturer.

Lecturers and demonstrations can be arranged for clubs and schools through the Home Economics Department. Guides will also be furnished to escort groups through the factory, the largest of its kind in the world.

Calumet is by far the most popular baking powder in America. Sales two and one-half times as much as that of any other brand.

Helen H. Downing, Director Home Economics Department
CALUMET BAKING POWDER COMPANY, CHICAGO, ILLINOIS
THE WORLD'S GREATEST BAKING POWDER

The following table is the day plan of one school.

8:30— 8:45—Breakfast: cereal and milk, or hot cocoa.
8:45—10:45—Lessons.
10:45—11 —Outdoor recess.
11 —Milk.
11 —11:45—Lessons.
11:45—12:15—Dinner: meat (or meat substitute), vegetables, bread of some kind, butter, simple dessert.
12:15— 1:15—Sleep on separate cots in a darkened, well ventilated room.
1:15— 3 —Lessons.
3 — 3:30—Lunch: fruit and milk, or salad, etc.
Tooth brush drill.

The rooms are light and airy and the temperature is kept between 45 degrees and 60 degrees. The menus are simple but varied and are planned with great care in regard to food value. Whole milk, fresh vegetables, fruit, real butter and cereals are found in each day's menus.

One of the greatest difficulties met is the prejudice the child has against the food. This attitude may have several causes. It may be caused by over-indulgent parents, by parents ignorant of food value or careless of their child's welfare.

In most cases this prejudice is overcome. The child who cries over his food at first is soon asking for more. Joseph, a little Italian boy, did not like oatmeal when he was first sent to open air school. His people, for generations, have not used this food. He had been in class but a few weeks when he was taking part in a discussion with the other children about the foods they liked best. Joseph was heard to say, "The best thing what I like is oatmeal."

One of the most important results of this work is its influence on the homes, especially of foreign children. There is much trouble caused through ignorance. Many mothers are very anxious to learn the secret of their child's improvement so that they may prevent poor health in their other children.

BECAUSE of space limitations it has been necessary to omit from this issue the following articles of equal interest concerning home economics work in Springfield:

"Play As an Organizer," by Jessie M. Lowe;

"Health Week at Chestnut Street Junior High School," by Anna Iverson;

"Reaching Into the Home," by Mrs. Margaret Ells and Helen I. Tolman;

"Practical Cookery Lessons in High School," by Eugenia Wilson;

"Experiments in Cookery," by Ruth W. Sykes.

These articles will be published in an early issue of Food and Health Education .

New York City Home Economics Supervision Meet

NEW YORK CITY supervisors of home economics met on May 24, 25, and 26, in a conference called by Emeline S. Whitcomb of the Bureau of Education, Department of the Interior, to discuss the problems and responsibilities of home economics educators. The conference opened with a dinner at the McAlpin Hotel at which Grace Schermerhorn, director of homemaking, New York City, was hostess.

The addresses at the dinner were given by Dr. Minna C. Denton, of the Office of Home Economics, Washington, on "The Outstanding Problems in Home Economics," and Mary E. Sweeney, executive secretary of the American Home Economics Association, on "Measuring up to the Responsibilities of Home Economics."

Dr. Denton in the course of her address urged that home economics women be not content to teach merely what their notes tell them. Her reasons were concerned with the basic facts of human existence and the relation of home economics to a solution of the problem of this existence. For example, she explained, girls who will marry into homes with incomes of $2,000 should be taught how to relate their home economics experience and backgrounds to the expenditure of

Home-Made Ice Cream ! ! !

Doesn't that sound inviting when the thermometer registers 90° F?

It can be made with a "body" as smooth as velvet and at a ridiculously low cost figure—if you will use

KLIM
SPELL IT BACKWARDS

Try this recipe — the basic formula may be varied — as shown

Basic KLIM "Ice Cream" Formula

1 cup KLIM Powdered Skimmed Milk
1 cup KLIM Powdered Whole Milk
1½ cups brown sugar
3 tablespoons cornstarch
1 tablespoon extract
3 pints liquid
3 eggs

Method: Put KLIM Powdered Milks, cornstarch and sugar in top of double boiler. Add liquid slowly, stirring to prevent lumps. Cook over boiling water until mixture begins to thicken. Add lightly beaten eggs and cook ten minutes, stirring constantly. Cool, add flavoring, strain and freeze. Will make ½ gallon of "Ice Cream."

VARIATIONS

Vanilla Ice Cream. Make above formula with water and use vanilla extract.

Chocolate Ice Cream. Make above formula adding three ounces bitter chocolate, cut in small pieces, while mixture is cooking in double boiler. Add vanilla extract after mixture has been cooled and is ready for freezing.

Coffee Ice Cream. Use 1 pint cold water and 1 quart strong coffee for liquid ingredient. Omit tablespoon of extract.

Almond Ice Cream. Use 1 pint water and 1 quart strong tea and 1 tablespoon almond extract.

Maple Ice Cream. Use maple sugar instead of brown sugar, and 1 pint of maple syrup and 2 pints of water for liquid ingredient. Omit tablespoon of extract. This maple ice cream is delicious if 1 cupful of chopped nuts are added or if ground nuts are sprinkled over each dish as served.

Institutions find Merrell-Soule Powdered Milk (which is the name of KLIM in bulk) invaluable in standardizing the total solids in their Ice Cream mix.

For further information write:

THE DIRECTOR, Department of Dietetics and Cookery, MERRELL-SOULE COMPANY, SYRACUSE, N. Y.

$2,000. They should not be made merely the receptables for information, more or less general, on incomes varying from that sum to $10,000. Similarly this information should be related in the minds of the students to mothers' pensions and any other problem actually occurring in the world of today.

Miss Sweeney pointed out the big responsibilities of home economics teachers to the homes of America, showing that it is possible to weld detached details of information and theory into a rounded unit of constructive action. That this working unit should express itself in terms of the interests of the homes of thousand-dollar incomes was her firm conviction. Moreover, she contended that the present status of the family is in a fluid state and that it is one of the opportunities and responsibilities of the home economics world to help in changing or crystalizing the point of view.

The second session of the conference was opened by Miss Whitcomb at the Board of Education Building. Emma Conley, state supervisor of home economics in New York City, spoke on "Objectives of Home Economics in the Junior and Senior High Schools." She pointed out that we are sailing on a more or less uncharted sea and that our first responsibility should be to impress on teacher training institutions that they are training home economics educators for real jobs.

Discussion of the "Content of the Course of Study for Junior and Senior High Schools" was led by Henrietta W. Calvin, director of home economics, Philadelphia.

The final session opened with an informal discussion of various points brought out in the meetings. Agnes Craig, director of home economics in Springfield, made a strong plea for the recognition of the social and spiritual values represented by home economics, relating her remarks to art and home economics education.

Miss Whitcomb in closing the conference expressed the hope that a committee might be appointed to study the problem by geographical sections, to present a cross section of the needs and interests of the country as a whole.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

49 **"Cream of Tartar Baking Powder."** Large wall chart, showing graphically the composition of this class of baking powder.

50. **"A Cook Book in Yiddish,"** featuring baking powder.

51. **"Ways to Save Eggs."** A cook book featuring baking powder.

52. **"Temperature Guide."** Accurate tabulation of proper temperatures for different cookery processes.

53. **"The School Lunch Box."** Illustrated leaflet giving attractive recipes.

54. **"Baking Powders, Classification and Ingredients."** Leaflet giving much scientific information on the composition of baking powders.

55. **"New Cook Book."** A new edition of a practical recipe book put out by a baking powder company.

56. **"Johnnie's Adventures With the Milkarpies."** Charmingly written booklet featuring value of milk.

57. **"An Interesting Experiment With Malnourished Children."** Reprint, showing good results of nutrition work on part of large condensed milk company.

58. **"Keeping Your Child Fit."** Menus for Little People, and the Adolescent Girl. Three pamphlets published by condensed milk company. Very attractively printed.

THE EVOLUTION OF BREAD

Bread standards have changed. Exterior qualities, once the determining factors of Bread quality, now play the minor role. To the new-day baker, nutrition is the big factor.

FLEISCHMANN'S YEAST

is the acknowledged source of high food-value — not just the best leavener, but an ingredient that actually adds wholesomeness to the loaf. Used liberally, it yields an exceptionally nutritious loaf.

THE FLEISCHMANN COMPANY

Fleischmann's Yeast *Fleischmann's Service*

FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Adviser. Dr. W. W. Skinner. Bureau of Chemistry, U. S. Dept. of Agriculture.

What Constitutes Spoiled Food?[1]

By CHARLES THOM
Bureau of Chemistry, United States Department of Agriculture

AS a basis of discussion the following definition is proposed: A food product should be considered spoiled when a discriminating consumer knowing its history or handling the "raw" product would refuse to eat it. Food laws as a rule link together the terms "filthy, putrid, and decomposed" as characterizing products which are repulsive, and designate them as legally adulterated, hence forbidden to enter the ordinary channels of trade. Proposals for the elimination of products in such condition constitute constructive efforts toward decency in the handling of our food supplies. To brand (as some do) such efforts as aesthetic is a gross error in the use of terms. Products are declared by such laws unfit for food when spoilage—filth, putridity, or decomposition—is demonstrated. In framing the verbiage of such acts, proof of spoilage is deemed sufficient to condemn a product. Reference to the effect of the spoiled product upon the health of the consumer is conspicuously absent from the Federal Food and Drugs Act. Much discussion has centered upon this omission but its fact clearly relieves the food official from proving a public health significance for each product condemned under this section of the act.

There are wide differences of opinion as to what constitutes unfitness for use as food. Some habitually eat products regarded by others as spoiled. There appears to be no definition for these terms which is accepted by all for application to all products. The alternative consists in the study of products by groups, subjecting them to contaminations, to fermentations, or to various types of microbial decomposition, and examining the results from the standpoints of decency in food handling, of acceptability to the consumer, and of their effect upon health. Following such a line of investigation, Savage in England recently fed putrid meat to experimental animals without ill effect. In similar experiments with rotten tomatoes, rotten eggs, and many other products, the experimentally spoiled materials neither produced disease nor poisoned the consumers. Experiments of this kind coupled with citation of fermented and bacterially ripened products regularly eaten have been held by some to justify salvaging for manufacture into human food any material not proved to be dangerous to health.

As bearing upon this question from a different angle, we find by the investigation of food poisoning outbreaks that extensively decomposed materials are habitually consumed by individuals and by families. Critical examination of the epidemiological reports of botulism have shown that many of these cases resulted from consuming materials known to be unsound but apparently not worse than other samples repeatedly tasted or eaten by the same people without ill effects. Our own laboratory experiments in feeding animals agree with this experience in showing that while the vast majority of spoiled products may be eaten without ill effect, the occasional sample carrying some dangerous organism is deadly. The physical character (appearance, odor, and taste) of the two types (the innocuous and the deadly kinds) of spoiled products commonly are not distinguishable. Such results harmonizing with those of Meyer, Rosenau, and their colleagues brand all spoiled food as potentially dangerous, hence not to be eaten or even tasted. Although cooking may destroy the danger of botulism, the worker who has encountered these products and their toxic power loses all appetite for spoiled food.

Filth

The obligation of cleanliness in food handling is universally admitted. Discrimination between the frills and essentials of cleanliness becomes a matter of judgment reenforced by experience where special methods are required for demonstration. The impossibility of absolute freedom from foreign matter in all its varied forms is stressed by the apologist for particular practices. What constitutes filth will vary from the presence of B. coli in two out of five 10 cc. samples of a bottled water to very considerable amounts of miscellaneous refuse in a sample of oats or a shipment of potatoes. Refuse which is readily removable from a raw product at the beginning of a manufacturing process or in preparation for the table may be significant only when its presence represents a substitution for a portion of the lot of foodstuff purchased. On the other hand, an insignificant quantity of sewage in shellfish or bottled water or a few diphtheria germs in milk while utterly indistinguishable to the unaided senses may carry disease to a whole community. Under proper means of demonstration products of both kinds have been repeatedly condemned.

Our attitude toward bacteria in foodstuffs may be quoted from another paper, published in The American Food Journal for November, 1922.[2]

> "From the standpoint of the food control officer, if found in products other than those produced by controlled fermentation, bacteria must be classed as contaminations along with insects and dirt. They are not a part of the product itself. As with dirt, their presence to some degree may be unavoidable but their numbers and kinds and their activities as far as tolerated must be strictly within sane requirements of cleanliness, decency, and substantial soundness in the products themselves. Minimal amounts of certain contaminating products are clearly filth, as has been repeatedly recognized by law and by the courts in cases involving the pollution of water and shellfish."

Essential cleanliness is a quality of operations and operatives not of equipment. A man with clean ideals may produce a fine product with poor and inexpensive tools. Scoring dairy farms upon an equipment basis has been vigorously condemned by men who oppose the use of the official score card. Nevertheless, Lamson (unpublished report in the B. C.) who inspected many hundreds of dairy farms both during and between operations used the score card and retorted that "You don't find a clean man working in a dirty hole." The surroundings, the methods, and the conditions of operation have been found to reflect the ideals of the operator, but there must always be discrimination between the essentials of equipment with the necessary cleanliness in operation, and the provision of equipment which is expensive, perhaps conspicuous and attractive but whose presence has no bearing upon strict cleanliness of operations.

Before leaving the subject of filth in food products, there is a whole field for study in the handling of products growing in irrigated areas and in areas subject to manuring with the wastes of our great cities. A miscellaneous assortment of refuse actually found in examining such products points clearly to the possibility of serious contamination. In addition several groups of bacteriological experimenters have demonstrated the possibility that products like lettuce grown in sewage-soaked land may carry viable typhoid organisms into the household. Any product eaten fresh from the soil becomes therefore a possible carrier of disease germs. Sewage farming or irrigation with sewage-polluted water intensifies the danger. At best, as shown in a previous study (C. T., Sound Food) of spinach, such a product may carry an enormous initial load of bacteria. At its worst. it is dangerous enough to justify close supervision of the sources of such products entering the food supply of any municipality.

Decomposition

Since putridity has been repeatedly characterized as merely an advanced stage of decomposition accompanied by foul odor the terms may be considered together. From the standpoint of the strict definition of words, all types of fermentation, including enzymic, bacterial, yeast, and mold activities which tend to break complex compounds into simpler ones are decompositions. From the standpoint of the administration of food laws, these terms have been held to cover such portions of this broader field as are usually understood under names such as decay and rot, which indicates the presence of physically objectionable appearance, odor, or taste. If the decomposed product lacks such an identifying character, or if that character has been concealed by subsequent manipulation definite evidence of its presence in material degree is a necessary prerequisite to condemnation.

In dealing with raw products in the consumer's market, the final purchaser may be expected to protect himself in large measure from such articles as rotten fruits and vegetables. Enormous losses of such perishables during transportation and distribution however, fall upon dealers of every grade. These losses must be distributed over that portion of the total amount produced which ultimately reaches the consumer. How far are these losses preventable? This series of problems is being solved product by product by the Department of Agriculture, the experiment stations, and the producing organizations involved. Sufficient to say, the conditions for transporting, storing, and handling such products as sweet potatoes, apples, pears, citrus fruits, berries, crop by crop are now becoming available. Practical utilization of these results depends upon education of food handlers and upon the cost of the improvements necessary weighed against the pressure of competition from parts of the trade which refuse to accept the higher ideals of quality. The food officer can many times hasten the adoption of such improvements by pressure for decent ideals upon the more negligent factors in the trade.

From the constructive point of view, measures which begin at the source and prevent or reduce spoilage at every step of the way to the consumer are immensely more valuable than seizure and destruction or rotten products in the terminal market. The latter is undoubtedly necessary occasionally but the former strikes at the root of the trouble. Candling eggs as they come from the farms, pre-cooling and icing fruit, keeping all milk below 50 deg. F., and maintaining such measures from the point of production to the final distributor will add to the cost per unit of all material starting toward the consumer. Such precautions will, however, reduce the amount of spoilage in the channels of trade and raise the average quality of all products subjected to the control measures called for. If the losses from improper handling were reckoned out, it is doubtful if the cost to the final consumer would be materially increased. There may be an exception to this in case of certain manufactured commodities in which the consumer now unconsciously eats the bad along with the good at a price based upon a low ideal of decency in production. Practices of this kind have no claim however to protection.

The abuses arising from decomposition are not so much in the sale of initial products in spoiled condition directly to the household as in the sale of such products in bulk for manufacture. Individual units in partially rotten condition are much more common than totally rotten products or total spoilage of all the units in a lot. Wherever inefficient handling processes prevail, sorting operations on a large scale become therefore the rule. Wherever rotten and part-rotten materials are available in quantity as in many large markets, salvage operations become profitable. Much perfectly sound material is recoverable, by sorting in some products, by culling and trimming in fruits and vegetables, by breaking candled eggs, or similar operations in other fields. Such operations must as a rule be followed by immediate manufacture to prevent further loss.

At this point disagreement in practice and policy enters. Apologists can be found who justify the use of any stock in manufacture which is not known to cause sickness or does not reduce sales by spoiling the appearance or flavor of the finished article. Certain illustrations may be cited. It has been found entirely possible to put 20 per cent of rotten tomatoes into catsup without altering the appearance, taste, or odor of the final product. In our own laboratory, three custards made from experimental dried eggs—(1) good, (2) slightly spoiled, and (3) plain rotten stock—were served without the detection of the sample in which the stock was rotten. These are not isolated cases. The progressive nature of bacterial change in products such as cheese during ripening has been cited to justify the use of all sorts of materials in manufacture as long as the consumer does not discover cause for complaint as this product reaches him. Such considerations are the basis of a market for rejected lots of foodstuffs at sufficient price to interest both sides in the transaction.

Salvaging for manufacture may be followed out with the same care as sorting for the consumer's trade but substituted for this ideal we frequently find as a sole basis for rejection the presence of such marks of spoilage as can not be concealed by the process of manufacture. Some find justification for this in recourse to the argument that some "alchemy" of their process has rendered it fit for food; others that in its final sterile form it will not cause sickness, hence objection is aesthetic not practical.

There is no contention as to selling rotten tomatoes or rotten apples to the household. The offer is not made for obvious reasons. A manufacturer who uses products in such condition does it with the knowledge that continuation of his trade depends upon concealment of the practice. The whole question of how to handle perishable products is involved as soon as we undertake to discuss means for eliminating such spoiled products from markets and factories. Picking, packing, and marketing practices which are entirely safe in the hands of producers delivering directly for "nearby" consumption may and often do fail when applied to car-lot shipments over a time measured in days rather than hours from the point of production.

The evolution of the food factory from a small plant with "nearby" producers to the enormous institution so common at present, whatever its efficiencies and economies, carries with it a transportation problem which is a tremendous handicap if highly perishable raw materials such as milk, berries, tomatoes, or spinach are involved. Too often improvements in methods of selection in the field or preparation for shipment and of delivery at the factory door have lagged far behind manufacturing skill in making a low grade "standard" product which will "get by" out of raw material which a discriminating consumer would reject. The pressure of increased fixed charges ("overhead") has frequently resulted in a competitive demand for raw materials so insistent as to break down ideals of quality.

Yet these same ideals are being successfully satisfied in the trade in certain fresh products. The organized citrus growers have cut their losses tremendously without materially increasing the unit cost of their product to the actual consumer. Eggs have been shipped from central Misrouri to Washington in August with practically no loss. Many similar accomplishments might be cited. With proper provision for handling, much of this spoilage can be avoided without unduly increasing the cost of the material. Succession transportation and storage within reasonable limits peculiar to each product is a matter of time and temperature. Aside from sterilized products, foodstuffs as a rule carry with them into the lines of trade, their own agencies of destruction either enzymes or organisms (usually bacteria, yeasts, molds, insects). Within the ordinary climatic conditions encountered, these agencies act slowly if at all, at or below the freezing point, then increase in rate with every rise in temperature until an optimum beyond which they slow down gradually. The amount of damage done in any particular exposure becomes a combination of the product itself, the kind of destroying agent, the temperature, and the time involved. Certain examples may be cited. Shell eggs are commonly stored just above their freezing point, but even here they deteriorate slowly and usually reach the limit of acceptability after nine to twelve months. At the temperature of the usual household (70 deg. to 80 deg. F.) the same stage of spoilage is reached in a few days. Meats, kept solidly frozen, stand long shipment and storage with little damage. According to Pennington (personal communication) a fowl to satisfy the housewife's demands for soundness, should be frozen as quickly as possible after dressing and continue frozen until it enters her kitchen. Hunter studying salmon from the spawning migration, found his samples if stored on the wharf for 48 hours at 59 deg. to 72 deg. F. with the eyes still bright and the gills red and without bad odors. The flesh was free from evidences of spoilage. After 72 hours, however, the eyes were dull and sunken, the gills discolored and sour or slightly putrid, and the flesh decidedly sour and in one or two instances slightly putrid. In this condition the fish was called stale and would have been unsalable in the retail market. Yet when canned, the less offensive of these fish, while recognizably not first quality, were found to escape condemnation by the usual commercial tests. The gradation from fresh to the early indications of staleness may be gradual enough to escape notice but in these experiments clear warnings of spoilage were found in the eyes and gills early enough to exclude from manufacture any fish in which decomposition had become established in the flesh. This work followed out in great detail by Hunter is cited as showing clearly that a fair regard for the ordinary marks of soundness in fish would readily exclude stock in objectionable condition from manufacture.

The same principles apply to other lines of food manufacture. Those engaged in handling a product become so familiar with its proper characteristics when fresh and sound that evidences of spoilage are immediately detected. I have seen a cheese-maker detect fermentation in a vat of milk when the rise of titratable acidity was but .01 per cent. Although occasionally constant association with spoilage breaks down a man's ideals of quality, it more commonly sharpens his aversion to anything below the best for his own use.

In general, the following statements seem fair and just:

1. The essential marks of cleanliness and soundness in foodstuffs are well within the knowledge and experience of those responsible for and engaged in food-handling.
2. Spoiled or partly spoiled materials can only reach the consumer through the relaxation of such precautions in selection, transportation, storage, or manufacture as are for the most part well known.
3. Increase in scale of manufacturing operations involving perishable foodstuffs carries with it responsibility for such changes in packing and transportation as will insure the delivery of sound raw materials.
4. Control measures, directed when possible at the practices causing spoilage, are more valuable than the condemnation of the final product.
5. In the spirit of the definition offered at the outset, the consumer is entitled to demand that the components of a manufactured food be all clean and sound.

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[1] Paper read before the Seventh Annual Convention of the Central States, Food, Feed and Drug Officials' Association, in Louisville, May 1-4.

[2] Thom, C., Food Poisoning and Its Prevention, The American Food Journal, Vol. XVII, November, 1922, No. 11, p. 35.

Discoloration, Smut or Blackening of Canned Lobsters

By E. G. HOOD, Ph.D.
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LOBSTER canning in America was first attempted at Eastport, Me., about the year 1840. The early results were poor, but a few years later the importation of practical canners from Scotland enabled a better product to be put up in hermetically sealed containers. From Eastport the industry spread to other Maine towns, but when the supply of lobster commenced to decrease about 1870 and the demand for canned lobster increased, dealers began to establish canneries in the Canadian Maritime Provinces, which stimulated the industry among Canadian factories. Official statistics state that in 1869, 61,100 cans of lobster wese preserved valued at $15,275, and from that date there was a steady increase amounting in 1920 to $5,179,569.00.

The industry is third in value in Canada of the fish and fish products marketed, being surpassed only by salmon and cod.

The number of factories in the Maritime Provinces is upward of six hundred and employs some 6,000 to 7,000 people.

With the increased production, the average price per pound per year has gradually increased. In 1883 it was 9.12 cents; in 1893, it had risen to 14.10 cents; in 1897, to 18.72 cents; in 1903, to 22 cents; in 1913 to 40 cents; and in 1921 to 47 cents per pound.

The bulk of the Canadian lobster exported finds its way to the United States, Great Britain, France, and South America.

Annual losses through discoloration to the industry have been estimated by some of the leading packers to be about $700,000.

Factory Conditions

Factory conditions for packing lobster in Canada are unique. The methods used are absolutely different from those used in the canning of other kinds of foods, such as vegetables, meats and other fish. Canners of these products insist that all cans be thoroughly exhausted and processed at a high temperature, whereas, in the packing of lobster, cans are not exhausted and in only one factory is sterilization accomplished in boilers at 212 degrees F. Heat penetration and resistance of spore forming bacteria are minor factors in sterilization. With the operators' knowledge and equipment, it is amazing that the product is as good as it is.

Description of Spoilage

Discoloration, smut or blackening of the meat and pickle in cans is the commonest trouble known to the fisherman or packer. Although called smut or blackening, the color varies. In some cases it is a blue black, in others various shades of discoloration varying from slight darkening to intense blackness may be present, and the amount may vary from a small area at the top to a general darkening of the whole contents of the can. The pickle which in perfect cans is usually clear and of a slight pink color, in spoiled cans may be very muddy and vary in color from a reddish-brown to a black inky liquid.

Cause of Spoilage

Results of experimental spring and fall canned lobster put up in Prince Edward Island during the seasons of 1921 and 1922 have proved that discoloration is due to both chemical and bacterial causes.

The blackening of canned goods is not peculiar to lobsters. Serious complaints have been made of the blackening of corn, beans and hominy. Such foods, like lobster, contain a large amount of protein which, when heated, gives off a trace of hydrogen sulphide, which produces several forms of discoloration; as a result of the combination with tin and iron, black patches are formed either on the top of the can next to the air space, or in other instances over the whole of the inner surface of the can.

In the cases of those cans which were infected with bacteria, spoilage was due to the packing of delayed or dead lobster, improper methods of sterilization and faulty cans.

During storage both chemical and bacterial discoloration increases, blackening not only the interior of the can but also its contents, and giving to the meat an unsightly appearance resulting in large quantities of unsaleable lobster.

The most serious difficulty confronting the industry, however, is that form of discoloration produced by chemical agencies.

Experimental Studies

In order that the packers might understand the nature of the trouble, and factory recommendations be made, the following points were investigated by experimental methods in 1921 and 1922 in factories at North Rustico and Borden, Prince Edward Island and at the Macdonald College Bacteriological Laboratory.[1]

(1) A study of the heat penetration of canned lobster.

(2) The use of inferior and high quality tin plate.

(3) Delay in packing.

(4) Proper and improper methods of washing lobster meat.

(5) The use of different percentages of salt in the pickle.

(6) The use of acetic and citric acid pickle, as a means of preventing chemical discoloration.

(7) The use of parchment or paper linings in can.

(8) The influence of exhaust on cans and meat.

(9) Acidity and alkalinity or PH of spring and fall pack lobster.

(10) Variation in spring and fall caught lobster.

(11) A comparison of acid spring pack with normal pack, and fall pack with alkali pack.

(12) Effect of linings, exhaust, acid and increased pickle.

(13) Washing in dilute acid preparatory to packing with solid pickle.

(14) Use of retort, or pressure cooker or processor.

(15) Different types of containers.

Throughout the investigation some 4,000 cans of lobster were packed and examined, sufficient to permit of an examination of a number of cans every month for a year and a half after the cans were packed. As results of the monthly inspections involve considerable detail a summary of the various experiments are stated.

Summary of Experimental Results

(1) All theories advanced by lobster packers as to the cause of discoloration, blackening and smut have been investigated by experimental methods.

(2) The results of experiments have led to certain definite results as to the causes and prevention of discoloration.

(3) The use of heavy tin plate does not prevent discoloration but may delay it.

(4) A good quality of tin plate is necessary for lobster cans — at least 2½ pounds of tin to the box of plate.

(5) The best packs investigated have been put up in the so-called "sanitary" can, with paper or rubber composition gasket.

(6) The enamel or lacquered can shows no improvement over a good quality sanitary can with a parchment lining.

(7) Tight seams are necessary with lobster cans to avoid entrance of air and consequent formation of rust, followed by blackening.

(8) Flux, resin, or soldering preparations have no appreciable effect on discoloration.

(9) Parchment linings with a good quality of tin plate are better than enamel cans, improving the general appearance and quality of the lobster.

(10) Canning of dead lobster produces typical discoloration.

(11) Delayed meat, whether in the shell or out on the table or in the cans, increases the amount of discoloration.

(12) In warm weather delay in handling of meat invariably results in blackening.

(13) Where lobster blood is not carefully washed from the meat blue black discoloration follows the pack.

(14) Leg and arm meat discolor more readily than claw and tail meat.

(15) Discoloration is not influenced by the percentage of salt or fresh water pickle.

(16) More pickle aids in sterilization, about a half more than is used at present.

(17) In closing cans, a top with paper or rubber composition gasket is better than a top with a raw edge.

(18) Cans defective in manufacture will result in a complete loss of product.

(19) Sterilization by two to four hours' boiling at 212 degrees F. is not sufficient to kill all bacteria that may be present, consequently a large portion of boiled cans shows discoloration caused by the growth of bacteria. Some bacteria found in sea water, lobster, etc., are killed only by nine hours' continuous boiling.

(20) The amount of discoloration in the meat and cans of fall pack lobster is much less than that of the spring pack.

(21) Discoloration, blackening or smut is of two kinds — chemical and bacterial.

(22) In processed lobster, chemical discoloration accounts for 85 to 90 per cent of affected cans.

(23) In boiled lobster, chemical discoloration accounts for about 75 per cent of affected cans.

(24) Sea water or well water from near shore or from unsanitary surroundings will cause trouble to the canner.

(25) Unsanitary conditions in and around the factory, dirty floors, tables and utensils, result in increased numbers of bacteria, which get into the meat or cans and cause discoloration or other troubles, resulting in a poor product and lower value.

(26) Cleanliness of employes, especially of those handling meat, is necessary for the same reason as in 25. Caps for confining the hair, clean aprons, clean hands and nails, and clean habits are absolutely necessary in a factory dealing with human food.

(27) By the use of acid pickle, chemical discoloration may be eliminated so that the lobster meat can be marketed as first quality lobster.

(28) Different types of containers have been tested — glass, zinc tops, etc. Glass is impracticable for small factories. The zinc top has merit and experiments concerning its use are in progress.

Recommendations for Packing Lobster

The lobster factory should be suitably located, substantially built, well lighted, and easily cleaned.

The ceiling and walls should be whitewashed yearly with a good mixture that will stick to the wood. It may be necessary, however, to suspend cheesecloth over working and packing tables to prevent any material dropping from the ceiling.

The floor should be of cement or of good close fitting lumber, with sufficient slope to drain readily. The drain should be accessible to facilitate cleaning, and with a good fall. Dirty water should be conducted well away from the factory.

The tables may be of wood covered with galvanized iron or zinc, sloped to facilitate drainage and washing.

Sinks and utensils should be preferably of white enameled ware.

Abundant water of good quality, either salt or fresh, should be available for washing. An elevated tank with

(Continued on page 349)

BOOK REVIEWS

Pharmaceutical Botany. A Text Book for Students of Pharmacy and Science. By Heber W. Youngken, A.M., M.S., Ph.M., Ph.D. P. Blakiston's Son and Co., Philadelphia. $3.75.

Students and directors of work in drug analysis and administration will find Dr. Youngken's scholarly work of keen interest.

Plant organs and organisms are studied in detail and the chapters on the standard drugs are authoritative and constructively helpful.

The book is beautifully illustrated and should prove a valuable addition to the library of any one occupied with matters pertaining to standard drugs.

Dairy Bacteriology. By Orla-Jensen. Translated from the Danish by P. S. Arup. P. Blakiston's Son and Co., Philadelphia. $3.00.

Studies of micro-organisms, of fermentations, bacteria, yeasts, and moulds make up the first part of this hand book.

Part II discusses the cleaning and procurement of milk, the microflora of milk, the preservation of milk and butter, the processes of ripening cheeses and the grading of milk.

Since the book has had unqualified success in Denmark, Germany, Finland and Holland, it is reasonable to suppose that this success will be repeated in the British and American fields.

Technicians and public health officials alike will welcome the author to their groups of consultants.

The Baby's Food. By Isaac A. Abt, M.D. New Edition. W. B. Saunders Company, Philadelphia. $1.25.

This little book is a collection of helpful diet suggestions and recipes. Dr. Abt makes no claim to originality so far as the recipes are concerned, his contribution being rather that of expert consultant, applying the foods represented to the proper conditions.

The two hundred recipes cover milk preparations, cereals and puddings, fruits and vegetables, sea foods and meats, prepared in such manner as shall be suitable for children.

Diet lists for different ages, together with directions for baths and packs, make up the final division of the table of contents.

American Livestock and Meat Industry. By Rudolf Alexander Clemen. The Ronald Press Company, New York. $6.00.

It remained for Mr. Clemen to perform for the meat industry such a service as is likely to prove an incentive to all other branches of the food industry.

In a large 12mo. volume of some 800 pages, beautifully illustrated and carefully edited, the author records with meticulous care the story of this great commercial activity from early colonial days down to the present, with its highly organized meat councils and Institute of American Meat Packers.

Part I is devoted to a consideration of the pre-refrigeration period; Part II takes up the refrigeration period; Part III considers problems of financing and marketing, while Part V covers the inter-relationships existing between packers and the public. An exhaustive bibliography concludes the volume.

To all who are interested in the numerous and complex problems presented by the economics of meat packing the book will have a strong appeal. The layman will find it most informing and the student and instructor of courses in foods will classify it as indispensable.

A Bibliography of Colloid Chemistry. By Harry N. Holmes, National Research Council, Washington, D. C. In mimeographed form, $1.00.

The author of this bibliography is the chairman of the National Research Council Committee on the Chemistry of Colloids. He has prepared 1,[illegible]00 classified references many of them accompanied by brief comment as an aid in deciding on their relative importance. Among the classified groups are adserption, asphalt, baking, biocolloids, capillary analysis, casein, cellulose and cellulose esters, cements, clays and soils, cleansing, coagulation, dialysis, emulsions, filtration, flotation, foam, flour, eggs, gels, gelatin, glass, glues, gold, gums, hydration, indicators, jellies, lubricants, milk, paints, rubber, sewage, silver, soap, sulfides, surface tensions, tanning, ultramicroscope, viscosity and water proofing.

The book is intended as a preliminary to a more comprehensive publication.

Right Food the Right Remedy. By Charles C. Froude, B.Sc. With an Introduction by Royal S. Copeland, M.D. Brentano's, New York. $2.50.

A simplified handbook of practical information on the subject of food and feeding. In plain language, the author tells the foods to chocse under varying conditions of age, climate and occupation.

Calling attention to the basic principles of diet, he describes in unusually telling phrases the penalties sure to follow an infraction of nature's laws.

While there is no attempt to profound chemical analyses, the book does give in essence most of the accepted methods for compiling satisfactory dietaries.

Some of the directions for making food combinations seem a bit arbitrary, as based on individual convictions, but for the most part it is not too much to say that any one using the handbook is fairly certain to get adequate returns in improved nutrition and health.

Standard Methods of Milk Analysis. By the American Public Health Association and the Association of Official Agricultural Chemists. Fourth Edition. American Public Health Association, New York. 40 cents.

This forty-page pamphlet puts in a nutshell valuable information regarding the bacteriological methods formulated by committees of the Laboratory Section of the American Public Health Association, American Dairy Science Association and International Association of Dairy and Milk Inspectors.

It also gives a summary of the chemical methods compiled by the Committee on Editing Methods of Analysis of the Association of Official Agricultural Chemists.

The technique of inspection and analysis is clearly set forth, there are directions for sampling milk, detailed description of laboratory reactions, discussion of various reagents, and a fine bibliography.

What to Cook and How to Cook It. By Nannie Talbot Johnson. G. P. Putnam's Sons, New York. $2.50.

According to the author this book "deals with the art of cooking rather than the science." Certainly the chapters are just what they profess to be, collections of attractive recipes for the preparation of each of the principal food groups.

Although the recipes are given in an informal, almost "chatty" fashion, the quantities are carefully worked out for a family of four to six persons so that the housewife knows exactly where she stands in the matter of portions.

A number of the recipes are merely re-statements of the standard rules. It is in the realm of special "touches," twists of garnishments and forms of serving that the strongest feature of the book appears.

DIGESTS FROM FOOD MAGAZINES

Effects of Humidity on Milling Processes

DISCUSSING the actual and relative effects of moisture and temperature on flour-mill stock, in a paper read before the annual convention of the Association of Operative Millers, reprinted in the "Modern Miller" for June 16, Edgar S. Miller, superintendent of the Leavenworth Milling Company, states that his observations have led to the conclusion that cool air is most satisfactory for the present process of milling. "And by cool air," Mr. Miller explains, "I mean air that does not contain too much heat. I believe, too, that no portion of the broken wheat should carry a temperature far below that of the air through which it must pass. Temperature differences are as great in summer as in winter, and heating wheat through and through is of no less importance at one time than at another. I have seen a mill producing very good flour, with a satisfactory yield, and an evaporative loss from wheat at first break to finished product of less than 1 per cent, when the temperature on the grinding floor was 64 degrees, the wheat 92, and a wet-and-dry bulb hydrometer on the side of a purifier registering 58 and 66 degrees. I don't know what the relative humidity was, but I think it was high enough.

"It would scarcely have been advisable to have sent the wheat to the rolls with less moisture than was used, and yet the flour contained about .1 per cent more than is allowable, and a full .6 per cent more than is considered desirable by some buyers. It is obvious that this mill did not need a humidifying system on that day.

"After turning steam into the radiators, bringing the room temperature up to 70 degrees, the evaporation between the first break and the finished product was about 1.4 per cent, the flour containing 13.42 per cent, the bran 14.2 per cent, and the shorts 13.36 per cent, the wheat carrying an even 15 per cent.

"Since it seems possible that fairly satisfactory milling results can be obtained in cold weather without the use of any humidifying system, it is only reasonable to believe that the condition most desirable in the summer is less heat, rather than more moisture. Whether mechanical refrigeration of the air which we must use is practicable remains to be determined. That the cost of cooling all the air within the mill would be prohibitive seems probable. It would certainly be very great in the super mill-buildings, with their walls and floors of glass and thin concrete and steel. But until more data are available I shall continue to believe that the excess heat of the air might be absorbed by water within pipes, as the heat is removed from compressed ammonia gas; and that the air may be delivered to our machines minus a portion of its heat, and not plus the water which contains this heat. The relative humidity of such air would be comparatively high, though the actual quantity of moisture present would be small. Having little capacity for holding moisture, it would not dry our stocks; but it would provide our machines with air that is really cool. Since little water-vapor would be present, condensation and precipitation could not occur. The amount of evaporation between our mill-mix and our finished product would then be under our control; and a low-ash flour made under such conditions would not be at the expense of the flour yield."

Some Facts About Pectin

J. C. BROWN, of the University of California, in "The American Vinegar Industry and Fruit Products Journal" for June, describes experiments with commercial pectins which solve a number of problems of jelly making, extraction, and determination of content in stock. Among these was an attempt to determine the relative strength of pectin from dried and fresh apples, using stock solutions from each source. The pectin tested was precipitated with alcohol, and the total solids in the moist precipitate were obtained. These were considered as pure pectin.

A weighted amount of each alcohol moist precipitation was then dissolved in water to form stock solutions. The amount of sugar required to jell 50 c. c. of each was determined, and the relative strength of the two was found to be the same.

The writer offers the following method of determining the amount of pectin in a solution, which he considers more accurate than the methods usually used:

An amount of sample (approximately 0.019 grams of pectin) which will yield about 0.02 grams of precipitate is taken. It is dissolved, if not already so, in solution, after which the pectin is hydrolyzed by the addition of sodium hydroxide. The solution is then acidified with acetic acid and finally calcium chloride is added, causing a precipitate of calcium pectate to form. This precipitate is washed and dried and the per cent of pectin in the sample is determined by calculation. This method requires only a few hours and is accurate. However, inasmuch as delicate scales and equipment are necessary, it can be applied only in the laboratory.

In commercial work a fair estimate of the amount of pectin in a stock solution may be estimated, Mr. Brown states, by adding alcohol to a small portion of juice and noting the character of the precipitate; a light precipitate indicates a low pectin content, while a large gelatinous precipitate indicates a high pectin content.

The conclusions arrived at from the experiments carried on at the University of California Mr. Brown gives as follows:

1. An impure pectin solution may be obtained by boiling fruits which contain pectin in water for from twenty to thirty minutes. The impurities occurring in this pectin solution are sugar, starches and acid.
2. The sugars can be removed by leaching processes.
3. The sugars have also been successfully removed by fermentation processes.
4. The starches can be removed by using a diastatic enzyme.
5. A good jelly should have approximately 1 per cent pectin and 65 per cent sugar in the finished product. The stock from which the jelly is made should have a p. h. value of 3.4.

Army Method of Judging Flour and Bread

HOW the army purchasing officers, charged with the responsibility of buying flour and bread for the various army camps, posts and stations, are taught to determine the relative values of samples of these products, is described in "Baking Technology" for June by Major Robert M. Littlejohn, who trains food specialists for the Chicago General Intermediate Depot, the purchasing point for Porto Rico, Panama and most of the United States.

The present garrison ration for the American soldier authorizes eighteen ounces of flour per man per day, with permissible substitutes in the form of such foods as fresh bread, hominy, or cornmeal. The families of officers and enlisted men buy their flour from the post commissaries or sales stores. Flour, therefore, is one of the most important subjects taught.

A study of the various wheats is the basis of this study of flour. This includes grading. In the school laboratory students are required to produce one or more samples of each of

Powers Heat Regulation Prevents Production Losses

Here Is The Proof!

Edgewater Laundry, Chicago. *C. P. Stroh, Manager, says:*

"WE operate one of Chicago's large laundries — and to maintain our reputation, we must be sure that all wool and silk garments are properly laundered without damage to texture or color.

"To accomplish that we equip the machine that handles these garments with a *Powers Regulator* because the water in these machines must be always of the same temperature and that temperature must always be close to 100 degrees. The cold water and hot water supply pipes lead to the washer through the *Powers Regulator* which automatically and surely maintains the required temperature.

"As it requires about an hour to run a batch through, we secure an average of 8 batches a day — and the total amount of garments placed in the machine per day has a replacement value of $800. The daily importance of the *Powers Regulator* can be appreciated by this figure. Before using the *Powers* the operator would feel the pipes leading to the washing machine — and then guess. The costliness of such a method can be readily appreciated. Just one flannel shirt ruined would amount to $10. Also considerable of the operator's time was formerly spent adjusting valves. Our *Powers Regulator* pays for itself at least twice every year — and relieves the management from all worry — and adjustments. In seven years' use never a cent have we spent for repairs on this regulator."

Beyond a doubt there are places in your own business where just as great savings could be effected as in the case cited herein. Let us solve your heat regulation problems as we have solved thousands of others. Any one of our representatives will call and go into the matter with you.

There is a Powers Regulator for practically every industrial process where heat is a factor. They're simple, easily installed and operated. They will function for years without adjustments or repairs.

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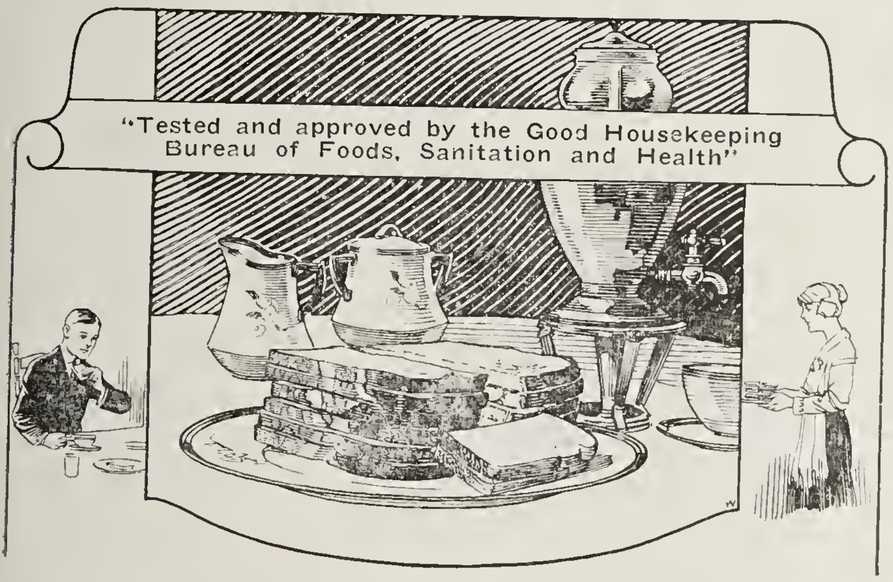


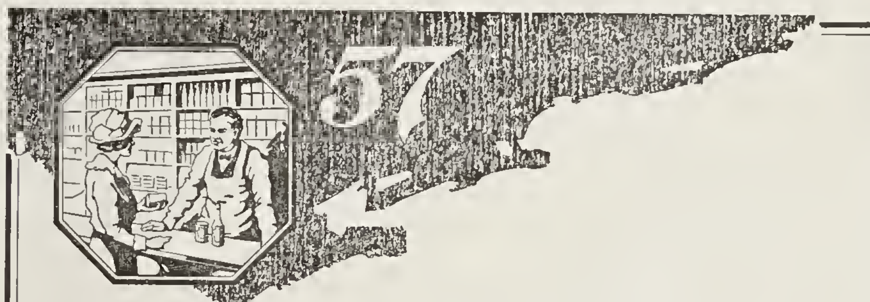
Chopped Ham Sandwiches

SPREAD thin slices of bread with nutritious Kingnut. Chop cold boiled ham very fine. Mix with chopped hard-cooked egg and chopped green pepper, olives or gherkins. Moisten with mayonnaise. Spread between slices of bread.

Children love "nut food" — and that is why they are so fond of Kingnut spread on bread. Kingnut is really made from cocoanuts, peanuts, and pure milk. No wonder it is dainty, delicious, and good for growing youngsters.

KINGNUT

Made from cocoanuts, peanuts and pure milk



Made from the Best Cider

Cider Vinegar that sells for less than fresh sweet cider is one of the mysteries that most grocers meet from time to time.

It is a point of pride with H. J. Heinz Company that it must charge more for Heinz Cider Vinegar than the cider would bring if it were sold as such.

First, because Heinz uses all the cider pressed from the apples in making Heinz Vinegars; second; because of the care and skill with which the vinegar making process is carried out and third, because of the time that the vinegar must be aged to give it the flavor and bouquet that are distinctive Heinz qualities.

H. J. Heinz Company

57 Varieties

the commercial grades of flour before he enters the bake shop. There they learn the principles of baking and to determine accurately the quality of samples of flour submitted to them.

The system of determining the relative value of these samples now employed at the Chicago Depot has been in effect for about eight months, and has proved very satisfactory. After giving the relative weights the article discusses the salient points of testing.

The list of determinations are as follows:

Flour:	Weight
Granulation	1
Color	3
Gluten, quality	10
Absorption	2

Bread:	
Weight of loaf	2
Volume of loaf	6
Form	1
Color of crust (2)	
Color of crumb (3)	5
Texture	10
Odor and flavor	10
Total points	50

The weight for each determination is reported on a basis of 100 before applying the weight factor. A total relative weight of 50 points each will give 5,000 for a perfect score. With some assumptions, Major Littlejohn explains, there may be instances of a flour grading over 100 on some particular thing, but so far, out of several hundred tests, no flour has been found that will give a total score equal to or greater than 5,000.

"As the army ration allows a specific amount of flour, the amount of water it will absorb makes little difference; hence absorption is given a relative value of only two. A good flour will have an absorption of about 60 per cent, but for convenience of calculation 50 per cent is assumed in accordance with the principles previously outlined. This permits the direct use of each absorption percentage in the score sheet when same is multiplied by four."

The following baking formula will produce a loaf of bread of about 600 grams: 400 grams of flour; 13 grams of sugar; 10 grams of yeast; 6 grams of salt; 7½ grams of lard (optional); water as determined by absorption test.

"Using 400 grams of flour," Major Littlejohn continues, "a loaf of about 600 grams results. Our factor or constant for the score card will then be 100-600, or 1-6. As weight has a relative weight of two the score card constant will be 2-6 or 1-3.

"From experiment it has been found that 400 grams of good, hard wheat flour will produce a loaf having a volume of 2,400 cubic centimeters. Our factor is thus 100-2400, or 1-24. With a relative weight of six for volume the score card constant becomes 6-24 or 1-4."

The score card is given as follows:

SCORE CARD FOR FLOUR U. S. ARMY
400 GRAM SAMPLE
THE Q. M. C. SUBSISTENCE SCHOOL

Sample No. .... Brand........
Name of bidder ....

FLOUR

Soundness and odor ....
(If unsatisfactory, reject and give reasons)

Scores

Granulation (basis 100 x 1) ....
Color (basis 100 x 3) ....
Gluten, quality (basis 100 x 10) ....
Absorption (per cent x 4) ....

BREAD

Weight (baker loaf in grams x 1-3)......
Volume (in cc. x ¼) ....
Form (basis 100 x 1) ....
Color of crust (basis 100 x 2) ....
Color of crumb (basis 100 x 3)...........
Texture (basis 100 x 10) ....
Odor and flavor (basis 100 x 10) ....
Grand total ....
Percentage ....
(Divide grand total by 100 and multiply by 2)

CHEMICAL ANALYSIS:
Ash (not to exceed .52%) ....
Protein (desirable limits 10-12%)........
(Tentative limits 9.50-12.50%) ....

REMARKS:
Inspector ....

Discoloration, Smut or Blackening of Canned Lobsters

(Continued from page 346)

hose connection will facilitate washing down. Some factories use steam from a hose for the final cleaning of floors, tables and utensils. This is an excellent practice. A proper bin should be supplied for refuse, shells, etc., and emptied daily.

The boiling vat should be located in the factory, and may be heated by steam or by fire.

All lobster and parts should be removed after each boiling.

The lobsters from the time it is landed until it is processed, should be handled as quickly as possible. After landing and weighing, they should be dumped at once into boiling water. While no definite time can be stated, owing to variation in size, about ten to fifteen minutes' boiling, or until claws shake off readily. Small lobsters do not need such a long boiling.

On removal from the boiler, the lobsters are placed on the cooling table, and as soon as they can be handled they are divided into: (1) Body with walking legs; (2) tail; (3) the claws and arms.

The body is thrown out. In some factories the legs are removed and passed through rollers to remove the meat. This leg meat is sometimes packed with tails and claws, but as it more quickly decomposes, this practice is not recommended. If used, leg meat should be packed by itself.

The tail meat is removed from the shell with a three-pronged steel fork.

The claws and arms are cracked open with a small chopper.

These operations are usually performed by men or boys, the subsequent operations being carried out, as a rule, by women.

The tail meat is then cleaned and washed. Several changes of water or running water should be used.

The claw meat is cleaned and after coagulated blood is removed it is washed in several changes of water, as is also the short arm meat.

The final washing of all meat should be in acid water containing one ounce of acid (acetic or citric) to the gallon of clean, fresh water.

The meat is now ready for packing. Cans previously lined with clean parchment water, are placed on the tables. The meat is packed in the usual manner and weighed.

One and a half measures of acid pickle should be poured into each can. This pickle is made with clean, fresh or salt water, 3 to 6 per cent of salt may be added, and to each gallon 2 ounces of either glacial acetic acid or citric acid must be added. If no acid washing of meat has been done, use 3 ounces of acid to the gallon of pickle.

Paper is then folded in, top adjusted, and reamed on with the machine.

The cans are then transferred to the retort, and processed immediately. In no case allow them to accumulate. It is better to process often with small loads than to delay until retort is full.

The retort should be heated to allow the contained air to escape. A full jet of steam should escape before closing pet cock.

Heat to 10½ to 12 pounds, or 240 degrees F. to 245 degrees F. for thirty-five minutes, for quarter-pound cans.

Heat to 10 to 12 pounds, or 240 degrees F. to 245 degrees F. for forty-five minutes, for half-pound cans.

Heat to 10 to 12 pounds, or 240 degrees F. to 245 degrees F. for eighty minutes, for one-pound cans.

At the end of the various periods of time, turn off steam, or remove heat, open pet cock, and when pressure is reduced open retort, remove and cool cans.

After cooling, the cans should be inspected for such matters as leaks, defects, etc.

Cans should be stored on their sides in a cool place.

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[1] The expenses of this investigation were met out of a grant made to the Associate Biological Committee of the Honorary Advisory Council for Scientific and Industrial Research of Canada.

A detailed report of the work will be published jointly with Dr. F. C. Harrison, Principal of Macdonald College, and Professor of Bacteriology.

7000 Good Cooks

More than 7000 of the best cooks in Southern California submitted recipes in the recent Los Angeles Times contest, conducted by Chef A. L. Wyman through the Times food pages.

Surely a popular gathering place!

And where people "gather" is a good place to advertise!

Food manufacturers who utilize the advertising columns of the Los Angeles Times are in the company of discriminating eaters.

The Times for two consecutive years has held the world's record for advertising volume.

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For Successful Home Baking

the right choice of baking powder is essential—a baking powder that, in addition to raising the dough in just the proper manner, adds nutritive value to the food. When you use

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"THE WHOLESOME"
BAKING POWDER

everything you bake will be more wholesome, more delicate in texture, more delicious in taste than ever before *Rumford* always produces the same perfect results at reasonable cost.

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The World's First Super-Bread

Ward's Vitovim Bread is a remarkable new development in food production based on the most recent discoveries in the field of human nutrition. It is the result of years of scientific research in the effort to produce a white bread which would contain enough of the essential nutrients of whole wheat and whole milk to promote normal growth and continued reproduction.

This delicious creamy white bread has been employed in feeding tests over a period of nearly two years. These experiments were carried on in our own laboratories and counterchecked by exhaustive tests in the Mellon Institute of Industrial Research of the University of Pittsburgh and in the laboratories of one of the foremost medical schools of the United States.

In these experiments animals fed on an exclusive diet of ordinary white bread or even ordinary whole wheat bread (made with little or no milk) failed to grow properly and soon died as a result of the dietary deficiencies of these foods.

In striking contrast, animals fed on an *exclusive* diet of WARD'S VITOVIM BREAD and water grew in perfect health to normal size, mated and reproduced normal offspring to the fourth and fifth generation, with every prospect of indefinite continuance.

The reports of the various laboratories were in complete agreement and the facts thus established conclusively proved that this loaf of bread contains (a) wheat proteins sufficiently balanced with milk proteins for normal growth and strength, liberal amounts of the protective substance water-soluble B, (c) ample amounts of fat-soluble A, (d) a well-balanced variety of body, blood and bone-building mineral nutrients.

The superior nourishment of VITOVIM BREAD is principally due to an extract of wheat-germ, rich in vitamins and mineral salts and to the exclusive use of rich whole milk as the only liquid ingredients of the dough.

Vitovim Bread is now available at all grocery stores in the cities listed below and in towns within a radius of approximately 100 miles from each city. It will also soon be available in Cleveland and Youngstown, Ohio, and adjacent territory.

All competitive breads, homemade included, are challenged to equal the nutritional value of Vitovim Bread in public tests

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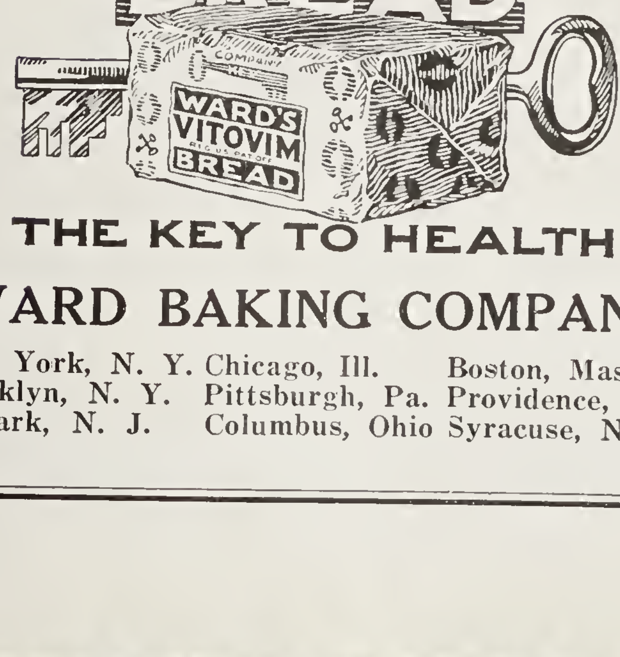
BREAD



THE KEY TO HEALTH

WARD BAKING COMPANY

New York, N. Y. Chicago, Ill. Boston, Mass.
Brooklyn, N. Y. Pittsburgh, Pa. Providence, R. I.
Newark, N. J. Columbus, Ohio Syracuse, N. Y.

Dairy, Food and Drugs Officials to Meet

American Dairy, Food and Drug Officials, meeting in the twenty-seventh annual convention of their association in Duluth, Minnesota, August 14-17, will take up problems of producer, manufacturer, distributor and dealer in a program which includes the following addresses:

"Importance of Inspection to the Dairy Industry," by Dr. C. W. Larson.

"Functions of the State in Control of Market Milk," by Thomas Holt.

"Functions of the Municipality in Control of Market Milk," by Dr. J. H. Schrader.

"Production of Certified Milk," by Dr. R. R. Ferguson.

"To What Extent Does Milk Contribute to the Dissemination of Communicable Diseases?" by Dr. J. A. Chesley.

"The Problem of the Itinerant Food Vendors," paper by G. G. Frary, discussion by H. M. Shea.

"Food Handling at County and State Fairs," paper by A. D. Sibbald, discussion by C. P. Guthrie.

"Unprotected Food Products, Particularly in Cafeterias," paper by W. P. Hartman, discussion by Sarah H. Vance.

"Functions of the Food Control Laboratory of the Bureau of Chemistry," by Dr. Fred Blanck.

"Perishable Fruits and Vegetables," symposium by Frank T. Swett, Wells A. Sherman and Ole Salthe.

"Publicity in Connection with Food Law Enforcement," paper by James Foust, discussion by W. W. Battle.

"Pectin, Its Manufacture and Proper Use in Foods," by Herbert Leo.

"Uniform Vinegar Bill," by William W. Armstrong.

"Recent Developments in Processing Canned Foods," by Dr. W. D. Bigelow.

"Dangers, Actual and Potential, of the Refilled Flour Sack," by Dr. H. E. Barnard.

"Policy of Drug Control," by Dr. George W. Hoover.

"False Advertising of Drugs and Medicines," paper by Dr. Oscar Dowling, discussion by Dr. S. C. Dinsmore.

"Methods of Publicity to Popularize Food and Drug Control," paper by Dr. S. J. Crumbine, discussion by A. M. G. Soule.

Other speakers will be Jay D. Miller, J. R. Chittick, Preston McKinney, L. M. Tolman, Walter G. Campbell and Dr. W. S Frisbie.

Government to Inspect Fruits and Vegetables

Twenty-two states have now entered into cooperative arrangements with the Department of Agriculture for shipping point inspection work on fruits and vegetables, it was announced recently.

Congress has provided that the certificate issued by the federal inspector on behalf of the secretary of agriculture shall be prima facie evidence in all courts of the United States, as to the truth of the facts stated thereon. Thus these shipping point certificates become highly valuable commercial documents in the hands of any organization which is in a position to make f. o. b. sales. In fact, if such sales can be concluded and confirmed on the basis of a definite United States certificate and the shipping point certificate shows that the product shipped was actually of this grade, the transaction may be considered legally closed and the shipper in a position legally to enforce the payment of the full amount of the purchase price through the courts.

Should the receiver, upon examining the car, believe that the products are not of the grade certified by the inspector, he may call upon the federal department for a reinspection, to secure which he must pay in advance a fee of twelve dollars, or three times the usual fee charged for inspection in receiving markets. Two federal inspectors will then reinspect the car, making an especially thorough and exhaustive examination, and if they sustain the buyer's appeal, the original certificate is reversed and the buyer's fee refunded him.

If the original certificate is sustained the government retains the twelve dollars, which has been paid in advance by the receiver. In actual practice, however, it has been found that a negligible number of shipping point certificates have actually been reversed in the markets. On the first forty-five thousand cars inspected at shipping point less than seventy appeals were made and less than half of these were sustained on reinspection.

Retail Grocers Meet in St. Paul

The plan for a Better Grocers' Bureau, which has been under consideration by a committee of the National Retail Grocers' Association for the last two years, was adopted at the twenty-sixth annual convention of the association held in St. Paul, June 25-28. This bureau will be operated as a department of the national organization. Under its direction text books will be compiled and educational courses for the trade carried on; standards are to be established and grocers throughout the country will be classified. It is hoped that through its work it may eventually be possible to keep the unfit, the incompetent and the inexperienced from getting into the retail grocery business.

The results of the study carried on during the past year by the Harvard Bureau of Business Research into the cost of doing business in the retail grocery trade were reported by Donald K. David, assistant dean of the Graduate School of Business Administration, of Harvard University, who declared that four essentials are shown to be necessary for the success of the business—increased sales per employe, good credit policies, more rapid turnover of stocks, and accurate store records.

The committee on revision of the constitution presented a permanent declaration of principles which was adopted by the convention. These covered membership, ideals of the association, channels of distribution, resale prices, protected prices, selling below cost, cooperative buying, the wholesaler as an assembler, quantity discount, unfair competition, trading stamps, factory stores, observance of contracts, guarantee against decline, advertising the retail price, salesmen and service men, credit, discounts, honest advertising, and responsibility to society.

The following officers were elected for 1923: President, Philip A. DePuyt, of Rochester; vice-president, John C. Sheehan, of St. Paul; treasurer, John H. Speas, of Kansas City. Herman C. Balsiger was re-elected secretary.

Margarin Companies Combine

The purchase of the Downey-Farrell Company, of Chicago, by the B. S. Pearsall Butter Company in Elgin, which has recently been effected, brings about the amalgamation of two of the largest manufacturers of margarin and butter in the country. On July 1 the Elgin firm took over the entire business of the Downey-Farrell Company, and plans are under way for extensive changes in the Pearsall company plant to provide for capacity production.

The additional business to be consolidated with the regular business of the Pearsall company will increase its annual output from 3,000,000 to 4,000,000 pounds over its previous production.

The B. S. Pearsall Company has been in the business of manufacturing margarin for eight years. By the new deal it now takes over the good will and business of manufacturing, distributing and selling margarin and butter which the Downey-Farrell Company has established, and among other things, the list of jobbers, distributors and customers, sales files and correspondence, government and private sales records, all brands of its products, including Jersey Hill brand of butter, Farrell's A-1 and Downey's Delight and other brands of margarin, all labels, trade marks, trade names, copyrights, and all other property required in succeeding to the business.

Committee Chairmen of Grocers' Association Appointed

The following names of those appointed as chairmen of the standing committees of the National Wholesale Grocers' Association have been announced by J. W. Herscher, Jr., president of the organization:

Governmental Affairs—

Pure Food and Legislative — E. F. Brewster, New York.

Federal Trade Commission — Arjay Davies, Pennsylvania.

Foreign Trade Relations — S. O. Meyer, California.

Postal Service — Thomas J. Marsden, Michigan.

Metric System — Jacob Blumlein, California.

Conference—

Canners — Arthur P. Williams, New York.

Canned Foods Week — Leslie Lieber, Missouri.

United States Chamber of Commerce — Guy W. Rouse, Michigan.

Economy Conference — John W. Morey, Colorado.

Contracts—

L. W. Mallory, Iowa.

Discount for Cash—

M. W. Griggs, Minnesota.

Educational—

General Education — Frank R. Wood, Jr., Kansas.

Sales Promotion — J. J. Miller, Illinois.

Publicity — E. B. Hawk, Illinois.

Outbound Delivery Costs — J. D. Houston, Pennsylvania.

Jobbers' Efficiency — O. J. Moore, Iowa.

Fire Prevention — D. C. Shaw, Pennsylvania.

Railroad Service—

D. H. Bethard, Illinois.

Containers—

A. E. Ayres, South Dakota.

Ways and Means—

C. H. Pickens, Nebraska.

Resolutions — W. C. McConaughey, W. Virginia.

Membership — R. C. Davidson, Indiana.

Arbitration—

A. L. Baker, Massachusetts.

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Guaranteed to comply in all respects to standard requirements of the U. S. Department of Agriculture.
Manufactured by
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Watertown, N. Y., U. S. A.

For Health's Sake-EAT—
SKINNER'S
The Superior Macaroni

The "ATLAS" Label
Protects You

It Has Stood for Highest Quality and Uniformity for Over Half a Century

"Atlas" Certified Food Colors "Atlas" Vegetable Colors	"Atlas" Carmine No. 40 "Atlas" Genuine Fruit Extracts	"Atlas" Pure Vanilla Extracts, Emulsions, Etc.

Manufactured at Our Works in Brooklyn, N. Y.
Correspondence Solicited, Prices and Samples Submitted

First Producers of Certified Colors

H. KOHNSTAMM & CO.
ESTABLISHED 1851
NEW YORK CHICAGO

Civil Service Examinations

The United States Civil Service Commission has announced the following open competitive examinations, further information concerning which may be obtained from the commission's headquarters, Washington, D. C., or from the secretary of the board of the United States civil service examiners at the post office or custom house in any city.

An examination for field agent in cooperative extension work in agriculture and home economics will be held to fill vacancies in the Office of Cooperative Extension Work, Department of Agriculture, and in positions requiring similar qualifications. The duties of the position are to assist state supervisory officers in methods of organizing and developing cooperative extension work in agriculture and home economics by means of county extension agents and otherwise. Entrance salaries range from $3,000 to $4 000 a year. The receipt of applications will close July 17 Competitors will be rated on their education, experience and publications or thesis to be filed with the application.

An examination for assistant specialist in home economics (food investigations) will be held throughout the country on July 25, to fill a vacancy in the States Relations Service, Department of Agriculture, at entrance salaries ranging from $2,700 to $2,880 a year, and vacancies in positions requiring similar qualifications.

The duties are to conduct investigations in regard to any phase of household preparation and preservation of food materials, the study of which may be required in the laboratory of the Office of Home Economics of the States Relations Service; to take charge of and be responsible for the work of other investigators in the same laboratory under the direction of the chief and assistant chief of the office, whenever and so far as may be required; and to prepare for publicity purposes the reports of results obtained from such studies.

The examination will consist of practical questions, a thesis, and a rating on education, training and experience.

An examination will be held throughout the country on August 8 to fill vacancies for teachers of home economics in the Indian Service. Entrance salaries range from $760 to $840 a year, plus the increase of $20 a month granted by Congress. In addition to the salary, appointees will be allowed furnished quarters, heat, light and subsistence free of cost, and where a physician is included among the personnel, will receive free medical attention.

It is desired to obtain teachers who are graduates of some recognized domestic science or home economics school, or of the domestic science or home economics department of schools of good standing.

Competitors will be rated on methods of teaching, home management, foods, clothing and sewing, and education, training, and experience.

Wheat Council Formed

Formation of a permanent Wheat Council of the United States consisting of a board of directors of fifteen, an executive committee of seven and an advisory council was decided upon at the National Wheat Conference of millers, bakers, farmers, representatives of transportation, banking and other interests, held in Chicago, June 19-20. The organization is for the purpose of establishing an "equilibrium between domestic production and consumption" of wheat.

The resolution creating the council reads:

"We recommend that a wheat council of the United States be organized at once in which all interests shall be represented. This council shall make a thorough, scientific study of this economic problem of the wheat farmer and enlist the coordinated effort of all interests to give publicity in every way to its findings and to develop and apply approved methods by which an equilibrium between domestic production and consumption can be established and the price stabilized on the basis of an American price level. This will insure an American standard of living, and create a domestic market for our entire wheat crop.

"Such a council is necessary in order that we may coordinate all intelligent efforts to increase the consumption of wheat and wheat products; that we may glorify the commodity in its essential goodness, healthfulness, and economy; that we may recognize the part wheat plays as the great vehicle of the other farm products such as meat, lard, poultry, dairy products, fruits, vegetables, sugar, and cotton; and especially that we may obtain prices for the American wheat farmer justifying the standards of American living to which he has been accustomed and is rightfully entitled."

The board of directors appointed for the year consists of O. E. Bradfute, president American Farm Bureau Federation, Chicago; Charles S. Barrett, National Farmers' Union, Union City, Ga.; S. J. Lowell; Alexander Legge, president International Harvester Company, Chicago; H. S. Helm, Russell-Miller Milling Company, Minneapolis; F. B. Wells, Minneapolis; Julius Fleischmann, Fleischmann Company, New York; Alexander Taggart, Taggart Baking Company, Indianapolis; Sydney Anderson, Congressman, Minneapolis; George C. Jewett, American Wheat Growers Associated, Minneapolis; Harvey Sconce, Dan A. Wallace, St. Paul; Judge Robert Bingham, F. Edson White, president Armour & Company, Chicago; and Harry Byram, president Chicago, Milwaukee & St. Paul Railroad.

Recent Patents

The following patents of interest to readers of The American Food Journal, have been issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of twenty cents each. State number of patent and name of inventor when ordering.

1,449,135. Method of washing compressed yeast. Alfred Wohl, Danzig-Langfuhr, assignor to Fleischmann Co., New York.

1,449,458. Apparatus for manufacture of ice cream. Lowell A. Sutermeister, Dayton, Ohio.

1,449,623. Ice cream freezer. Leroy S. Pfouts, Canton, Ohio, assignor to H. H. Miller Industries Co., same place.

1,449,688. Method for the manufacture of sweetened condensed milk. Timothy Mojonnier, Oak Park, Ill., assignor to Mojonnier Bros. Co., Chicago.

1,450,105. Machine for making and finishing cheese. Julius R. Meyers, Glencoe, Ill.

1,450,483. Process of making bread. David Chidlow, Ridgefield, Conn.

1,450,836. Powdered modified milk substitute. Alfred W. Bosworth, Boston.

1,451,031. Confection-making apparatus. Clifford B. Speck, Oakland, Cal.

1,451,081. Honeycomb-candy cutting and rolling machine. Edward J. Momence, Lima, Ohio.

1,451,135. Food product and process of production. Albert W. and Elizabeth H. Wright, San Francisco

1,451,424. Means for grinding or pulverizing food or other substances of a similar nature. Ronald Head, Luton, England, assignor to Joseph Baker Sons and Perkins Co., White Plains, N. Y.

1,452,586. Apparatus for desiccating foods. Agnes L. Andrea, New York, N. Y., assignor to Nichols Dehydrator Corporation.

1,453,752. Food compound and process of producing the same. Harold E. Collyer, Simcoe, Ontario, Canada, and Charles P. Mabee, Buffalo, N. Y.

1,453,859. Milk product and process of making the same. Clarence S. Stevens, Sheboygan, Wis.

1,454,153. Process of preparing sugar (for use in manufacture of chocolate). John Carr, Esher, and Arthur B. Bradley, Fulham Park, England.

1,454,888. System for selling and packing food products. Weston Green, Dayton, Ohio, assignor to Green & Green Co., same place.

1,455,254. Utilization of edible fats. Max Kahn, New York, assignor to Intarvin Co.

1,455,923. Apparatus for producing flaked and other food products. Nathan Mininberg, Dickinson, N. D., assignor to Bran Products Co., same place.

1,457,004. Edible cereal product and process of making. George H. Saunders, Akron, Ohio.

1,457,143. Apparatus for the sizing and distribution of fruit. Ernest M. Brogden, Winter Haven, Fla., assignor to Brogdex Co., same place.

1,457,319. Growing of yeast. Bert A. Stagner, Pittsburgh, assignor to National Retarder Co., Chicago.

1,457,320. Growing of yeast. Bert A. Stagner Pittsburgh, assignor to National Retarder Co., Chicago.

1,457,417. Apparatus for processing pumpkin and like material. Leland A. Babcock, Chicago, assignor to Sprague Canning Machinery Co., same place.

1,457,760. Biscuit or like embossing and cutting machine. Thomas and Edward L. Vicars, Earlestown, England.

1,458,130. Process and apparatus for classifying food products. Clarke E. Davis, Douglaston, N. Y., assignor to National Biscuit Co., New York.

1,458,427. Method of treating fruit juices. William T. McGeorge, Honolulu, Hawaii.

1,458,695. Almond-blanching machine. Julius Frank and Joe D. Pirtle, Chicago.

1,458,998. Pumpkin-peeling machine. Henry Sletto, Atascadero, Cal.

1,459,063. Sausage linking and twisting device. Ferdinand Kruse, Port Richmond, N. Y.

1,459,064. Sausage-twisting device. Ferdinand Kruse, Port Richmond, N. Y.

1,459,065. Sausage-twisting device. Ferdinand Kruse, Port Richmond, N. Y.

1,459,066. Sausage-twisting device. Ferdinand Kruse, Port Richmond, N. Y.

1,459,067. Sausage-twisting machine. Ferdinand Kruse, Port Richmond, N. Y.

1,459,068. Sausage-twisting machine. Ferdinand Kruse, Port Richmond, N. Y.

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Operating Expenses Standardized for Grocer

Bureau of Business Research Offers Unified System of Accounting Based on Needs of Merchants

By M. P. McNAIR
In Charge Cost Research Work, Harvard Bureau of Business Research

THE publication by the Harvard Bureau of Business Research of its Bulletin No. 34—"Operating Expenses in the Wholesale Grocery Business in 1922"—marks the seventh consecutive year for which such a survey has been made. The bulletin shows that for 1922 the average net profit in the wholesale grocery business was 0.5 per cent of net sales, the average gross margin 11.6 per cent, and the average total expense 11.1 per cent. The summary of operating expenses in the wholesale grocery trade was based on reports received for 1922 from four hundred and forty-two wholesale grocery firms located in forty-four states and Canada with an aggregate sales volume of $556,021,000. The reports used in the preparation of this annual summary were adjusted to a uniform basis in accordance with the standard classification of accounts prepared by the bureau in cooperation with the National Wholesale Grocers' Association and published by it as Bulletin No. 8.

The Bureau of Business Research is a part of the Harvard Graduate School of Business Administration and was founded in 1911 for the purpose of securing information to use in teaching in the Harvard Business School. At that time comparatively little was known about distribution costs, and the bureau, therefore, undertook to find out the actual cost of operating retail and wholesale businesses in such trades as shoes, groceries, jewelry, drugs, hardware, and dry goods. At the inception of its field work to secure figures on operating expenses the bureau learned that practically no two firms in the same trade kept their accounts in the same way and that many kept entirely inadequate records.

M. P. McNair

Some, for example, reckoned profits on the cost and some on the selling price. Some charged salaries for their own time and rent for their own stores, while others did not. Some considered that selling expense included only wages of the sales force, whereas others lumped practically all operating expenses under this head. The situation, in short, was that no two business men were talking the same language, when it came to comparing their operating expenses. The need was evident for some common basis of comparison, some common measure so that differences in expense percentages would reflect real differences in conditions rather than differences in accounts. Consequently, uniform definitions of accounts had to be worked out for each retail and wholesale trade where the bureau has endeavored to secure figures on operating expenses.

The Harvard bureau is not and never has been a commercial institution. At first the expense of its studies of the cost of doing business was borne entirely by the Harvard Graduate School of Business Administration. After this work had been carried on for several years, however, its practical value to business men became so evident that arrangements were made to meet expenses by national associations in the various trades. The National Wholesale Grocers' Association, for example, in addition to cooperating in many other ways, has for the last few years borne the expense of the bureau's annual study of operating expenses in the wholesale grocery business.

In making its annual study the bureau sends out, soon after the close of the fiscal year, blank profit and loss statements consisting of a merchandise statement, an expense statement, a net gain statement, and a financial statement, and a list of questions intended to check the accuracy of the entries and to furnish incidental information about the trade. This form, accompanied by a circular letter explaining the bureau's object in undertaking this work and soliciting cooperation, is mailed to wholesale grocery firms throughout the United States. When the profit and loss statements are received, names and other means of identification are removed and they are given confidential file numbers in order to guard against the possibility of any individual firm's figures being used in any way that might reveal their iden-

Melvin T. Copeland
Bureau of Business Research

tity. In the bureau's statistical department the statements are then checked carefully to make sure they have been adjusted accurately to the standard form. In the course of this adjustment it frequently is necessary to write to cooperators to make sure that the figures have been interpreted correctly. As the next step, percentages, on the basis of net sales as one hundred per cent, are computed on each individual statement for each item of expense, for gross margin, and for net profit, and the rate of stock-turn is determined. As rapidly as these figures are worked out they are tabulated in such a way that the common figure for each item can be arrived at readily.

After all the common figures have been determined a bulletin is prepared showing common figures for the various individual items of expense for the trade as a whole, and also making separate comparisons for firms grouped according to volume of business, according to Federal Reserve districts, and according to their rate of stock-turn. Comparisons also are made of the results shown by identical firms reporting for different years. This bulletin is mailed free of charge to all firms who have cooperated by submitting reports; it is made available to business men in general at a nominal charge. The percentage figures for each individual firm reporting also are returned to that firm with the common figures for the trade as a whole, and for the particular Federal Reserve district in which the firm is located listed in columns parallel to its own figures. In this way it is possible for each wholesale grocer to have a yard-stick by which he can measure the results of his own business and see whether his expenses and profit have been higher or lower than those for the trade as a whole or those for firms of similar size and in the same location.

The accompanying table taken from the 1922 bulletin affords opportunity for comparison of operating expenses between businesses of different sizes in the wholesale grocery trade in 1922.

Figures such as those given in this table are especially serviceable to business men for guidance in checking their own results . A merchant can place the percentages shown on the report for his own firm alongside the table of common figures for firms with a similar volume of sales and judge how closely his results compare with those shown by other firms of that size. For example, if a wholesale grocery business in 1922 had net sales of $1,500,000, and if its total receiving and shipping expense was 2.5 per cent of net sales, it can compare this figure with a similar figure in the table showing common figures for one hundred and six firms with sales between $1,000,000 and $1 999,000. This comparison will indicate that total receiving and shipping expense for this particular firm was 0.5 per cent higher than the common figure for firms in the same volume group . Furthermore, this firm can compare its total receiving and shipping expense with the common figure for other firms situated in the same Federal Reserve district and comparison also can be made with the common figures for firms having approximately the same rate of stock-turn. Such comparisons as these will indicate to the firm where the greatest opportunities for economy are to be found.

In the retail grocery field the Harvard Bureau of Business Research is performing a similar service in collecting figures on operating expenses to provide a standard by which individual retailers can measure the results of their own businesses. As was the case in the wholesale grocery trade, it first was necessary to work out a uniform system of accounts to serve as a common basis of comparison. This system, which was published as Bulletin No. 3—"Operating Accounts for Retail Grocery Stores"—has been distributed widely among retail grocers. In numerous cases it has helped individual merchants to secure a better knowledge of their own business through improved accounting methods. It also has helped to bring about on their part a realization of the need of more informa-

OPERATING EXPENSES. GROSS MARGIN, NET PROFIT, AND STOCK-TURN IN 1922 ACCORDING TO VOLUME OF SALES

Net Sales — 100 Per Cent

	Net sales less than $500,000	$500,000-$999,000	$1,000,000-$1,999,000	$2.000,000 and over
Number of firms	126	153	106	57
Total salesforce	2.5%	2.7%	2.8%	3.0%
Advertising	0.04	0.06	0.06	0.1
Other selling	0.07	0.08	0.06	0.2
Total selling	2.6	2.8	2.9	3.3
Wages of receiving and shipping force	1.4	1.3	1.3	1.4
Packing cases and wrappings	0.05	0.05	0.05	0.04
Outward freight, express, and cartage	0.6	0.6	0.5	0.7
Total receiving and shipping	2.0	2.0	1.9	2.1
Executive salaries (including buying)	1.2	1.1	0.9	0.8
Office salaries	0.8	0.9	1.0	1.1
Office supplies and postage	0.2	0.2	0.2	0.2
Telephone and telegraph	0.07	0.06	0.07	0.07
Credit and collection	0.2	0.2	0.2	0.2
Other buying and management	0.09	0.09	0.2	0.2
Total buying and management	2.6	2.6	2.6	2.6
Rent	0.5	0.5	0.5	0.5
Heat, light, and power	0.07	0.08	0.08	0.06
Taxes (except on buildings and income)	0.3	0.3	0.3	0.3
Insurance (except on buildings)	0.2	0.2	0.2	0.2
Repairs of equipment	0.09	0.05	0.04	0.04
Depreciation of equipment	0.2	0.2	0.2	0.2
Total interest	1.7	1.7	1.7	1.5
Total fixed charges and upkeep	3.1	3.0	3.0	2.8
Miscellaneous	0.2	0.2	0.3	0.3
Losses from bad debts	0.5	0.4	0.4	0.4
Total expense	11.0	11.0	11.1	11.5
Gross margin	11.4	11.5	11.7	12.1
Net profit	0.4	0.5	0.6	0.6
Stock-turn	6.0 times	5.8 times	5.4 times	5.6 tim.

tion about their business and has shown them what items of expense properly must be included in the total cost of doing business before any real net profit is earned.

After preparing this standard system of operating accounts for retail grocery stores the need for a simple method of keeping records that would not take the grocer too much time or require a detailed knowledge of double-entry bookkeeping became apparent, and the bureau devised a simple set of record sheets, making them available at cost (about $3 for a year's supply). In this system there are three sheets—daily, monthly, and yearly. On the daily record sheet the individual cash transactions of each day are recorded. This sheet is a substitute for a cash book. On the monthly record sheet entries on the daily sheet are summarized day by day. There is one line for each day in the month with a separate column for each item under Cash Received, Cash Paid Out, Accounts Payable, and all the other accounts. At the end of the month the totals of the columns indicate the results of the month's business. The totals on the monthly record sheet are entered at the close of the month on the yearly record sheet which has one column for each of the twelve months, and a final column for yearly totals. One of the special features of this yearly sheet is that it facilitates the comparison of sales figures and some of the expense items month by month. In addition to these sheets the retailer, of course, will have records of his accounts payable and accounts receivable. Since the double-entry method of bookkeeping provides a check on the accuracy of accounts, its use is recommended wherever possible, but in many small retail grocery stores the Bureau's record sheets have served to furnish useful and accurate information about the business with a minimum expenditure of time.

J. W. Herscher, Jr.
President, National Wholesale Grocers' Association

Early in July, 1923, the Harvard Bureau of Business Research published Bulletin No. 35—Operating Expenses in Retail Grocery Stores in 1922. The data in this bulletin were based on reports from four hundred and forty-three firms with an aggregate volume of sales of $443,475,000. For these firms the common figure for total expense was 18 per cent of net sales, for gross margin, 19.3 per cent, and for net profit, 1.3 per cent. This means that of each $1,000 of net sales in a typical retail grocery store in 1922, $807 was required to pay for the merchandise sold, and of the $193 remaining as gross margin, $180 went to meet the expense of store operation, leaving the retailer a net profit of $13. Other summaries similar to those outlined for the wholesale grocery trade are published in this bulletin and serve to furnish retail grocers with the same sort of guide with which to check his own figures as the wholesale grocer has in Bulletin No .34.

Value of Statistics to the Food Manufacturer

Reliable Figures Protect the Individual by Showing the Results of Business Systems and Business Foresight

By E. W. McCULLOUGH

Manager, Fabricated Production Department, Chamber of Commerce of the United States

TRUTHFUL data and correct figures frequently designated as statistics are considered by business pilots our greatest need in steering our business craft safely.

The stability of a business enterprise and its success depends largely on the accuracy of the statements and figures presented to efficient management. So also in a larger sense is it necessary that the secretary of commerce of the United States should have before him regularly dependable figures on the production stocks and consumption of all our essential commodities and those of other lines having a collateral bearing upon them, in order that he may answer the question, "How is business?" at any time. For census purposes he is empowered by law to collect and compile such data as he may deem necessary to give a general summary of business, and while our census reports render much valuable information, giving as they do a history of the past, statistics today, in order to be of use to quick moving business, must be almost instant and very accurate.

There is still a lingering feeling in industry that it is nobody's business, and especially that of the government, what manufacturers, distributors and retailers are doing, yet all three are suffering today from lack of information which should come through fresh, up-to-date figures. What profiteering occurred along in 1920 was made possible to a very large extent by the lack of figures on production, stocks and distribution. Quantities of commodities were withdrawn from the market, warehoused and held for speculation, which created a shortage, advanced price inordinately and finally were responsible for the crash that followed the dumping of these reserve stocks on the market.

The public has a right to know more intimately what is being done in business and such information is a help and not a hindrance to fair and intelligent competition. It is no longer considered to the advantage of industry that the buyer be kept in ignorance as to available stocks and the market for his requirements. Indeed that information is necessary if he is to buy intelligently. The present secretary of commerce has unceasingly urged the production of data to illuminate the field of industry and has called upon trade associations representing various commodities to equip themselves to speak authoritatively for their respective lines by setting up and operating machinery for the gathering, analyzing and presenting of figures on production, stocks, orders, prices and employment, which they should be capable of doing better than any other agency because of their technical familiarity with their lines.

A recent inquiry sent to a number of trade associations brought the following returns as to their activities in serving their members along statistical lines. The number prefixed to each item indicates the number of associations rendering each classified service:

16	Production
28	Shipments
17	Orders—new
10	Orders—cancelled
20	Orders—unfilled
4	Plant capacity
4	Plant operation
12	Operating costs
8	Wages
5	Number of employees
13	Stocks on hand
10	Sales
2	Product consumption
5	Raw material consumption
2	Raw material stocks
9	Credit information
3	Advertising
2	Purchases
2	Markets
1	Terms
3	Imports

In order that trade associations may furnish such figures, not only to their members but to the government and the public, no expensive equipment is necessary. It can frequently be accomplished without additions to the regular office force, but accuracy is paramount and the co-operation of the association's members absolutely essential. It frequently happens, however, that members of trade associations while casting about for such information subscribe to the service of public statistical organizations to obtain it, yet are unwilling to give up their own figures in order that the report made on their industry be complete. Sometimes this hesitation is due to a fear that if their figures are given they will not be considered confidential, as they should be, but there is very little evidence that trade association secretaries, entrusted with many other responsibilities, will not regard such a trust as sacred and furnish only totals.

Every line of industry is in a sense competing with every other line and business as a whole is simply the aggregation of transactions in all lines, consequently the contributions of figures from all lines are necessary in order to make the picture complete. In some countries the giving of such data is compelled by law, but in this country, aside from those figures required for census purposes, the giving of such data is voluntary, as it should be.

It is therefore apparent that what we need most in industry today is education to the end that we must ourselves give up to receive benefits from complete statistical information. A few lines now through their trade organizations present to each member weekly or monthly a statement of unfilled orders, production, shipments, and stocks on hand. With these figures complete from at least 70 per cent of an industry it is possible for a plant to regulate its production in a most satisfactory way. If stocks are piling up and orders falling off, production may be safely decreased, while if the reverse is true increased production can be intelligently planned. This condition, as stated, obtains in comparatively few lines. The majority determine their courses by the best information available, which is frequently neither uniform nor satisfactory, and guesses or estimates must be made with the result that most lines are constantly handicapped by too great or too little production, generally revealed too late to apply a remedy intelligently.

Our coal troubles last fall aptly visioned the value of statistics, for not only was the paper scanned each morning for production figures by the business man, but also by the householder, because his comfort was in jeopardy. It will probably be some time before we approach anything like completeness in this matter of securing complete business statistics, but we shall approach it much more rapidly if each will realize his responsibility and furnish his quota of facts. Business foresight is more and more necessary, as the doing of business is beset with increasing complications.

Today we are discussing the usefulness of studying the business cycle, largely another term in considering cause and effect. To do this intelligently it is necessary to review our business records of the past over a term of years, noting the ups and downs and estimating as nearly as possible the causes for these various fluctuations and then planning to protect ourselves against their recurrence as far as possible. All of this, however, involves again the question of accurate statistical figures, not only with reference to our own business, but the entire line we are engaged in as well as other lines which either indicate the general trends throughout the country or have a collateral bearing upon our own. Most serious changes which affect business do not simply happen and are not calamities to be classed with tornadoes or floods, but may be traced to certain business neglects or abuses which might have been prevented through intelligent watchfulness and the taking of steps to counteract them.

It is apparent, therefore, that the value of dependable statistical figures is greatest to the individual, if they are made use of, but even considering the welfare of the nation as a whole their greatest value is again the protection of the individual when used by the government in behalf of business.

Some Facts About Powdered Milk

Reliquified Dried Product in Its Various Forms Is Nutritious as Well as Convenient for Household Use

By MARY REED HARTSON

Director, Department of Dietetics and Cookery, Merrell-Soule Company

NUTRITION experts, dietitians, physicians, nurses and welfare workers—in fact, all who are engaged in the occupation of improving our national dietary deficiencies—urge milk, milk, more milk daily.

It is an interesting fact, however, that few of these have placed at the disposal of the people lay information on the various forms of milk commercially distributed.

Home economics teachers, as a rule, stress liquid milk, its composition and characteristics, in their class room lessons. Not infrequently they pass but lightly over other kinds of milk available, which are a decided factor in the American dietary of today. Practically every home makes daily use of fluid milk, evaporated milk, sweetened condensed milk, or powdered milk.

Of these, fluid milk is recognized as the standard. The other three, therefore, should be compared with fluid milk to determine their greatest adaptability to the uses of the fresh product.

One class, in making such comparisons with evaporated milk, sweetened condensed milk and powdered milk (of both the roller dried and spray powdered varieties), tested for

1. Color.
2. Odor.
3. Flavor.
4. Composition — Butterfat; solids other than fat.
5. Reactions
    A. Normal bacterial activity causing souring (cottage cheese lesson). B. Enzymic reactions with rennet and junket tablets (junket lesson).
6. General adaptability to the uses of fresh milk.

Sweetened condensed milk and evaporated milk have been before the public for a number of years and their process of manufacture is more or less clearly understood, but the use of powdered milk as a household commodity is comparatively recent and but little is known about it. There are two distinct types on the market today: Dried milk, which is roller or drum processed, and spray powdered milk.

Dried milk is the solids of milk generally obtained by the roller or drum process as follows:

"The milk is dried on steam heated cylinders, which, as they revolve, are given a coating of milk. The heat conducted from the inside evaporates the water and leaves the solids in a dry layer on the surface, from which they are scraped off with knives which extend the full length of each cylinder." (Stocking.)

Spray powdered milk is milk which has been pasteurized, then forced through an aperture of minute diameter, at a high pressure, into a chamber where currents of filtered warm air evaporate the water content.

This product is in more general use, both in bulk for the bakery, ice-cream and confectionery trades and also in the household. When reconstituted with water it in all respects compares with liquid milk. The pasteurizing temperature employed is only sufficient to destroy all pathogenic bacteria and does not coagulate the albumin or toughen the casein. This type of milk has a guaranteed keeping quality of from four to six months. Skimmed powdered milk will of course keep much longer.

Dried milk, if placed under a microscope, will appear to be in flat irregular flakes. Spray powdered milk, under the microscope, is of perfectly spherical particles.

In reconstituting dried milk, greater solubility will be obtained by using warm water. Spray powdered milk may be reconstituted in ordinary cold water. If hot or boiling water is used, the albumin coagulates and a lumpy solution results.

The greater part of the whole milk (full butterfat content) powdered in the world is made by the spray process. Such powder contains 28 per cent butterfat which, when reliquified, gives a 3½ per cent milk.

The advantages of powdered milk from the standpoint of household use are obvious:

There is always a fresh milk supply in the home;

There is no waste from souring;

No ice is necessary;

Freedom from contamination is assured.

Powdered milk is of especial advantage to the homes with growing children, in such non-dairying areas as:

West Texas, Florida, the coal mine, desert, and mountain regions. It supplies uniformly pure, fresh, liquid milk on camping or picnic trips and during traveling.

All scientific data available to date indicate that reliquified powdered milks contain full enzymic reaction and vitamin potency and are therefore acceptable from the nutritional standpoint.

Powdered milk may be obtained in various forms, as powdered skimmed milk, powdered half-skimmed milk, powdered whole milk, powdered cream. Of these, the skimmed is largely sold in bulk, the half-skimmed for very young infant feeding, the whole milk for all purposes for which fresh milk is employed, and the cream, principally to the confectionery and ice-cream manufacturers.

Powdered milk has been generally available for household use only about four and a half years, but each year shows a steady sales increase.

Two States Pass Filled Milk Bills

Forbid Manufacture of Filled Milk Products and Margarin Containing Vegetable Oils

THE legislatures of the states of Washington and Oregon at their 1923 sessions adopted laws which prohibit the manufacture and sale of filled milk products and of margarins containing vegetable oils. The laws in the two states are practically identical. The one in Washington is described as:

"An act relating to milk products, to prevent fraud therein and adulteration thereof, regulating the manufacture and sale thereof, and providing penalties for violations thereof."

The first section of this act relates to filled milk products. Filled milk is an entirely separate and distinct product and is in no way related to margarin or oleomargarine. That section of the law should have been a separate and distinct law just as the federal Voigt law is. The law regulating filled milk should never have been made to include a law regulating oleomargarine or margarin. There are already numerous state and federal laws regulating margarin or oleomargarine. The act referred to prohibits the manufacture and sale of margarins containing vegetable oils. It does not prohibit the sale of margarines made of animal fats. There are large quantities of vegetable oils used with animal fats in the manufacture of oleomargarine. This type of oleomargarine constitutes about one-half of the oleomargarine made in the United States. To be more specific there are about one hundred million pounds of oleomargarine made exclusively of vegetable oils; there are about one hundred million pounds of oleomargarine made of a mixture of about half and half vegetable oils and animal fats; there are only about one million pounds of oleomargarine made exclusively of animal fats. The vegetable oils used in margarins are cocoanut, peanut, and cottonseed oils. More than four times as much cocoanut oil comes from the Philippine Islands than is used in the manufacture of oleomargarine. The Philippine Islands belong to the United States. The cotton seed oil is made in the United States. Large quantities of peanut oils are produced in the United States. A high tariff protects American producers of vegetable oils.

Advocates of the two laws describe them as health measures. That is a debatable question. There is certainly no health measure in the act as far as it relates to oleomargarine. The only difference that has ever been declared to exist between butter and oleomargarine is the difference in the quantity of Vitamine A which they contain. It is conceded that Vitamine A is important in human nutrition. Butter sometimes contains large quantities of Vitamine A and sometimes it does not; oleomargarine sometimes contains a sufficient quantity to promote the growth and health of animal life, and sometimes it does not. All types of oleomargarine contain more or less of Vitamine A. There is, perhaps, no one food stuff, except milk, that contains all of the necessary food nutrients to promote growth and health. There are, according to nutrition experts, sixty-one food-stuffs that contain Vitamine A. As a matter of fact, therefore, the well-balanced diet containing all of the food nutrients necessary to promote growth and health may be selected without including in it either butter or oleomargarine. More than that, the work on foodstuffs with respect to vitamines has, by no means, been completed. It has only recently been found that cocoanut oil contains a fourth vitamine which is necessary for the prevention of rickets. Vitamines B and C, which are not found in milk fat, butter, or oleomargarine, are just as important vitamines as Vitamine A which is the only one found in milk fat, butter, and margarine.

Those in favor of the bill have said that the farmer must be protected from the competition of butter substitutes if he is to survive. It has been pointed out that Washington and Oregon face timber famines within forty or fifty years and that the two states must look to dairying and stock breeding for their economic nourishment.

Manufacturers of margarin in reply have said they were ready and willing to admit that any sound means of helping the farmer was desirable but

(Continued on page 396)

THE CONFERENCE TABLE

The Home Economics "Business Woman"

By MARY REED HARTSON

Director, Department of Dietetics and Cookery, Merrell-Soule Company

THE home economics business woman has many interesting fields open to her today. Manufacturers of products of appeal or necessity to the woman of the home are realizing more clearly daily that their sales policy must be correlated with an advertising policy which is based upon the dissemination of accurate information.

The compilation of facts necessary for a background of knowledge concerning a "home product" to be merchandized, presents excellent opportunities to the research worker and to the scientist; the practical application of these scientific data is most logically presented to the public, however, by the woman who has the vision to see the exact point at which her theoretical and technical training must blend with her natural common sense.

Such a woman in the office of a commercial organization can and does stimulate sales, and as such she is a producing factor in the organization, although she creates these sales or promotes their growth indirectly rather than directly.

The advertising and sales departments are, as a rule, direct in their appeal to the buying public. They advertise quality and monetary value. Regrettable as it is, they not infrequently are so short sighted as to "knock" their competitors in an effort to "boost" themselves.

The psychological sales promotion as stimulated by the home economics business woman is of a healthier and more enduring quality. Her sales interest is created through education. She teaches the public why her given article has merit, why it is pure, why it is durable, why it is economical—and she draws upon her wealth of special training to disseminate information which will help the manufacturer's patron. Therefore to repeat an order will be a pleasure to the consumer (and manufacturers agree that it is the "repeat business" which gauges production stability and financial strength).

Even so short a time as five years ago the home economics business woman was a pariah among her professional associates. She was considered unethical, a backslider from the ideals of her Alma Mater. Today she is recognized as a specialist in her profession. A physician may be a specialist and be accredited as out of the ordinary run of general practitioners. A dentist may specialize in oral surgery and be out of the ordinary run of dentists; both acquire rather than lose standing in their profession. As a specialist, the home economics business woman is creating new standards in the profession of home economics.

Mary Reed Hartson

Teaching classes of hundreds of thousands monthly, through lessons in the advertising pages of women's publications, is bound to broaden her vision, as well as to create the interests of others in her product.

Contact with basic figures, such as costs of manufacture, costs of distribution, costs of advertising, costs of her own departmental development, is invaluable and will strengthen her position as a sales producing unit. "Overhead" and "depreciation," "distribution" and "cost maintenance" will take on a definite significance heretofore only vaguely appreciated.

Her commercial educational material, which is in itself of a sales stimulating nature, to be of greatest value must be:

1. Scientifically correct;
2. Ethically distributed;
3. Disassociated from any direct attempt to sell.

These are three basically important points.

Too many firms and too many self styled "home economics experts" have permitted exploitation of educational contacts, in a misguided effort to create a quick upward peak on the sales chart, and many sincere and earnest workers in the field today are suffering for these mistakes of others.

School superintendents have been wary of any one who presented a business card and who wished to carry a message to the homes through the children. Home economics supervisors are apt to be abrupt in their refusal even to meet the representative of a commercial firm who wishes to speak to the children. Why? Because advantage has been taken of such extended courtesies and instead of offering constructive educational material to the students, the so-called "educational work" has resolved itself into nothing more nor less than oral advertising campaigns.

The advent into the business field of the ethical home economics business woman is changing this attitude. School superintendents are being educated to the fact that a firm which has committed itself to the extension of knowledge about its product, through the establishment of a department under the direction of a trained home economics woman, is really in the position of having created a scholarship for research and development of knowledge about its article. A representative of such a department is a teacher, equipped with the latest available information on her subject.

It is a fact that school time will be given a lecturer who may recently have climbed some remote peak in the Alps and yet the school superintendent would refuse to permit "Miss Gertrude Smith of the Feathery Flour Mills Company" to talk to the classes in physical geography and home economics about the marvelous wheat lands of the northwest and the growth and development of a wheat kernel into a group of health promoting foods for mankind, because "the schools cannot be exploited for advertising"—although "Miss Smith" might not, in any way, mention "Feathery Flour." It is quite possible, however, that "Miss Smith" might be able to bring constructive thoughts to the classes, applicable to their immediate studies, and that the message might be of at least equal educational value to that of the lecturer.

However, each year increases the number of home economics women who are going into the business field to apply their training. Each year will see a proportionate decrease in the present attitude of criticism or antagonism on the part of a few of the conservative "old guard," who have a limited vision of the possibilities of increasing the purchasing power of the dollar in the hands of the American housewife through the combined efforts of the manufacturers and the home economics business woman, to teach her how to buy, what to buy, where to buy and when to buy.

Rising Prices—And How To Meet Them

By J. H. McLAURIN
President, American Wholesale Grocers' Association

Editor's Note—According to our announcement in the June issue of The American Food Journal, we are giving herewith certain excerpts from the address of J. H. McLaurin, president of the American Wholesale Grocers' Association, at its recent convention. The two quotations raise several important questions of interest to all of the groups represented in the food field.

IT is well for us here to state that the matter of determining a selling price and the matter of taking any action to bring manufacturers to the adoption of trade methods which we deem fair to the wholesale trade, must be handled by the initiative, the will power and the commercial manhood of the individual wholesale grocers themselves. Activity in those lines is, as the law is now thought to be, denied associations and associations' efforts. Therefore, how important it is for every wholesale grocer to realize that his salvation in these respects rests in his own hands and in his own hands alone. And just here is the call to wholesale grocers to rise up and individually to assert their inalienable rights of commercial life, of commercial liberty and the pursuit of prosperity.

The association's relation to the public is the least satisfactory condition of any of the relations which have been discussed. The public through its ignorance of the wholesale grocers and the function of the middleman and the warehouseman still has a sort of notion that the wholesale grocers have full and complete control over the raising and packing of articles of food, and any rise in price or any scarcity of such articles they readily attribute to the greed of the wholesale grocers and the disregard of the public welfare on the part of the wholesale trade. Why, even a large majority of the public undoubtedly think that wholesale grocers are to blame for the recent rise in the price of sugar—sugar, that word which the wholesale trade would be glad never to hear again so far as it relates to buying and selling. If the public has been made to smart because of sugar manipulations the wholesale grocers have been burned to cinders. Here is another activity in which we must engage ourselves in order that these wrongful notions may be corrected. Until such time as the wholesale grocers can provide a fund for co-operative advertising and thus make plain to the world what manner of men they are, it devolves again upon the individual wholesale grocer to see that any articles or items in newspapers, magazines, pamphlets or booklets wrongfully reflecting upon the wholesale grocery trade or wrongfully interpreting its function or wrongfully decrying its activities are promptly answered and silenced.

J. H. McLaurin

Advancing Prices

There has been an advance in both wholesale and retail prices. During the month of February the increase in wholesale prices was about one point. Raw material prices rose about six points. There is every prospect of a continued increase in prices.

Is the present revival of business permanent, or is this another temporary boom? This is the most difficult question to answer and there is no information available to forecast with accuracy what the future months will bring forth. There are, however, certain facts that are significant and certain tendencies that should be watched. In the first place, building materials are at extremely high prices and the wages of the building trades are, in many cases, most extravagant. Sooner or later, and probably sooner, there will be a break in the construction industry. The expenditure by the railroads for additions and betterments is also a tremendous factor in the present business activity. Up to the present time this program of expenditure does not reach beyond the present calendar year. There are certain commodities also on an extremely speculative basis. This is the case with sugar. Stocks and bonds with a large speculative element attached to them are again becoming active in the market. The farmer has not been able to recuperate from the past two years and a half of depression. The best judgment of business experts is that prices will remain firm, probably for all of the present year, but that a break in prices of some considerable importance will probably be due soon after. In other words, at the present time most industries, with the exception, probably, of the building industry and the automobile industry, are on a firm basis; there is, therefore, at present no considerable or general inflation, but certain industries are bound to recede and certain price adjustments are absolutely essential. When these recessions and these adjustments are made, business will suffer.

A business policy under these conditions is one of considerable caution. The business man should take full advantage of his opportunities to sell, but he should avoid long time contracts at high prices and all burdens that extend far into the coming year. The non-speculative policy is one where the mark-up of prices follows market values up and market values down. The most important point in a period of business uncertainty like the present is that changes come with extraordinary suddenness. The business man should amass some reserves in the months of prosperity to withstand these sudden shocks of business adjustment. All in all, however, 1923 should be a year of great and general business prosperity.

DIGESTS FROM FOOD MAGAZINES

Shortening and the Chemistry of Baking

SHOULD baking be taken as an exact science or as a series of experiments? This is the real question raised by Washington Platt of Merrell-Soule Company at a recent convention of the American Association of Cereal Chemists in Chicago, and set forth at length in the July issue of the "Modern Miller," in an article dealing primarily with the action of shortening in various baking mixtures.

"The one ingredient in any baked product which has by far the largest effect is shortening," says Dr. Platt. "The fundamental effect of shortening is to make the product easier to break. Consider any of the standard ginger snaps on the market made with shortening. They are popular with the public, command a fair price, and are sold to the extent of thousands of pounds each year. The same snaps made in exactly the same way except for the omission of shortening would have the same appearance and would give practically the same sensations to our organs of taste and smell. A snap made without shortening, however, would be as hard as a piece of wood and would hence be deficient in its chewing qualities which are so important. Such snaps would be impossible to sell in any quantity at any price, as the chewing properties of a food have much to do with the pleasure of eating and are also closely associated with digestibility.

"Shortening is any fat or fixed oil used as an ingredient in baked products. That material has the greatest shortening power, which when baked in a dough under standard conditions, gives to the product a minimum breaking strength and a minimum crushing strength.

"A biscuit of the kind named," continues Dr. Platt, "would contain flour, sugar, ammonium-bicarbonate, monocalcium-acidphosphate, bicarbonate of soda, water, shortening. If we should mix this dough without shortening we would find that all of the ingredients are either soluble in water or wetted by it. Such a dough is, therefore, a continuous mass and it remains so after baking. It may contain holes due to the formation of gas but the biscuit forms a solid, continuous mass around these holes just as cement may form a continuous mass around the stones which are mixed into it.

"If we now add any form of shortening to the dough we introduce an ingredient of a kind entirely different from any of the others, in that shortening is not soluble in water or wetted by it. Shortening must, therefore, remain distinct from the rest of the dough. It does, in fact, distribute itself through the dough in droplets or layers, often coating the starch grains and strands of gluten. This structure of the shortening extending throughout the mass but remaining distinct from other ingredients can in fact be seen in the dough and in the finished biscuit under the miscroscope by the proper methods of staining. Shortening forms, as it were, a multitude of minute cracks which prevent it from forming a, continuous mass. This action is similar to the action of paraffin paper used in wrapping caramels. Without these layers a box of caramels would become one solid mass."

In his article Dr. Platt details scientific knowledge in regard to the various shortening agents and their respective values. "There is a tremendous difference," he says, "in the shortening powers of different oils and fats. Mineral oils have much less shortening power per pound than the fatty oils. The plasticity of the shortening at the temperature of mixing seems to be a factor of the first importance. Plastic fats are mobile enough so that they extend through the dough in the process of mixing, yet hold their shape and position so the films of fat do not run together and finally run out of the dough. Such fats seem to hold gas better than others .If we arrange the common shortenings in the order of their shortening power we find the following (fats with the greatest shortening power being given first): Lard, lard compound, cottonseed oil, butter, cocoanut oil, liquid paraffin. Another factor of the first importance seems to be the content of unsaturated glycerides which each fat contains. Unsaturated shortenings cover twice as much of the surface of a dough as the saturated ones."

These and other chemical facts are stressed by Dr. Platt to show the importance of physical tests and a working knowledge of chemistry in the baking industry. Why, he asks, is our knowledge of the chemistry involved in many industries so incomplete? Why not use the methods of analysis which science has supplied, instead of going the longest way around?

"The old iron master," he notes, "judged the quality of his product by breaking a casting and examining the fracture, noting the color, fineness of grain, etc. From these he drew his conclusions regarding changes in his mixtures and methods. Such methods were certainly old fashioned, but are they not closely parallel to methods now used in examining baked products such as bread? We cut a loaf of bread and examine the cut surface, punching and crushing it a little. We then go ahead and score the loaf, a process which is indefinite at best and on which no two people have ever exactly agreed. What I would advocate is some definite physical measurements on our finished product in addition to the present scoring.

"Many other industries in a condition similar to the baking industry," concludes he, "have found definite physical measurements on the finished products powerful aids in the making of rapid progress."

Some of the chemical tests recommended by Dr. Platt are: Determining the tensile strength of the bread; testing the compressibility of a standard cube of bread under a light load; making up a standard biscuit and baking it under standard conditions.

Starch Content of Sorghums Computed

THE percentage of starch in sorghum juice and various methods of computation are set forth in detail by Sidney F. Sherwood, of the Department of Agriculture, in the July number of "Industrial and Engineering Chemistry."

"Only four or five out of the hundreds of samples of juice from sweet sorphum tested by the writer for the presence of starch, using the iodine test, have shown a negative reaction," writes Dr. Sherwood. "In juice that has been preserved by the addition of mercuric chloride, the suspended solids separate into a more or less compact layer of greenish grey material, showing in most cases a well-defined layer or band of white starch granules. The literature contains an occasional brief reference to the presence of starch in sorghum juice, but there seems to be no printed statement giving the quantities of starch present in the expressed juice.

"The investigations here reported were conducted in connection with breeding experiments and varietal tests of sweet sorghums. All samples of juice were expressed by a small 3-roll mill from mature stalks from which the blades and seed heads had been removed. Two hundred cubic centimeters of thoroughly mixed juice were placed in a bottle, preserved by the addition of a trace of mercuric chloride, and stored in an icebox. Other work necessitated a delay of several months before the determination could be made, and during this period the supernatant juice became clear and the sediment formed a compact layer containing a clearly differentiated starch layer or band. The clear portion was siphoned off and discarded; the entire residue was washed into a collodian dialyzing sack; a few drops of toluene were added, and the material was dialyzed against running tap water until all sugars had been removed. Ordinarily they were free in 4 days. As a matter of precaution, they were then dialyzed against distilled water for 2 days, changing the water several times each day. All the material in the sack was then transferred to a beaker and the starch was determined by the diastase method, omitting the preliminary extraction with ether and alcohol."

In addition to the foregoing report, Dr. Sherwood gives a table showing his findings with different varieties of sorghum in regard to the percentages found of starch, sucrose and reducing sugars and their ratios.

Science Brings Pimentoes to our Canneries

HOW American ingenuity has increased the pimento pepper industry is set forth by J. Sidney Cates in a recent issue of the "Canning Age."

"The story really starts twenty-five years ago," says Mr. Cates, "when a market gardener living near Griffin, Ga., found a pimento plant in a lot of pepper seedlings. It excited his curiosity and he sent to Spain for a full list of seedlings. Having developed his raw product to his satisfaction, he was still a long way from canning it. Time and labor are both plentiful and cheap in Spain, and it was against the Spanish product that he had to meet the stiffest competition. Take the Spanish method of peeling as an example. There, the pimento was baked in hot ovens until the skin became charred and then it was peeled by hand. And here a Maryland lad first enters the picture."

This enterprising young American, just mustered out of the army, in 1919 began to perfect processes which soon replaced the crude, hand methods hitherto used.

In addition to superior building facilities and greater attention to uniformity of product, machines were instituted for coring and roasting, and automatic washers took the place of hand devices.

"The operation of coring which the machines perform," states Mr. Cates, "is to cut a circular ring around the stem of the pepper and then extract the core and seed by suction through the opening thus made. The machine used consists of an air-tight chamber, in top of which are six openings. These openings connect with valve heads, which in turn support six revolving cylinders. On the end of these cylinders, protected by guards, are placed the cutter heads. Here the operators are stationed, one to each cutter head. The operator places the pepper in the guard frame and the cutter head makes a circular cut in the top of the pepper. As soon as a sufficient cut has been made to release the core, the constant suction created by a blower attached to the air-tight chamber draws the core and seed into the valve heads, which in turn drops them into the air-tight chamber. From the bottom of this chamber, a screw conveyor delivers the core and seed to a revolving slot device, and thence to a long conveyor extending under the line of machines.

"When cored, the peppers are conveyed into the roasting and canning room. The roasters parch the skins, thereby enabling them to be removed from the peppers, and are arranged in two batteries of four machines each. Each roaster unit consists of a long arched furnace and two lines of cones, the latter so arranged on tracks that they pass through the furnace. The cones are made small enough so that the cored peppers may be slipped over them with ease. While the cones with their load of peppers pass through the furnace, it is kept white hot by a series of burners placed at the lower corners of the furnace. This heat is maintained by the use of a gas and air mixture created just above each battery by corresponding cylindrical tanks of air and gas under pressure. A blower keeps the air pressure constant and the gas is drawn into the burner by the air itself, as the various valves are opened that permit the mixture to enter the burners.

"The peppers spend a very few seconds in passing through the furnace, and when emerging from the opposite end the entire surface is black and the skin is parched. Automatic devices slip these parched peppers into conveyors, which carry them to cylindrical washers. As soon as the peppers enter the washers, a constant deluge of water causes the charred particles of skin to pass off with the waste water. The peeled peppers then merge into another system of conveyors, which in turn carry them to the different lines of endless belt-packing tables. Here the preparation of the peppers for packing consists in going over them to remove particles of peeling and sort out broken and torn pods. They are then flattened out and fitted into the cans.

"The remainder of the equipment in the canning room consists of standard canning machinery. After filling, the cans pass through exhaust boxes and closing machines, and are cooked in open kettles or continuous cookers."

As a natural result of the use of these progressive methods of preparing the pimento for canning, the output of American pimentoes increased greatly—as witness Mr. Cates' summary of present conditions, three years after the new processes were installed.

He says: "Spain's total pack, consisting of the output of between thirty and forty plants, did not exceed close to one hundred thousand cases. And reduced to the same units, the pack of one American company alone was eighty thousand cases. American enterprise and methods of canning have wrested from Europe the supremacy of Europe in another line of canning."

A Place for Pecans in the Dietary

Why not add pecan nuts to our daily menu?—asks Mrs. H. G. Lucas in the July issue of the "American Nut Journal."

Most people, according to Mrs. Lucas, think of nuts merely as a pleasant accessory to the ordinary diets to be eaten after hearty meals, between meals or whenever the spirit moves one. But the idea of regarding them as a daily necessity, such as meat or eggs, is a new one to the average person.

To quote Mrs. Lucas: "Do you know that a pound of shelled pecans has four times the food value of the edible portion of a pound of meat? Take the plebian hamburger steak—the usual size cake has the same food value and costs more than half an ounce of pecans (10 to 16 halves). This same amount of pecans is approximately equal to 1⅓ eggs; ½ cup of macaroni and cheese; ¼ cup of thin cream; a slice of roast chicken; 2 ears of corn on cob, 6 inches long; ½ cup of canned salmon; one medium potato; or a large head of lettuce.

"But one may say, pecans along with other nuts are so indigestible. When we take into consideration their high food content we can readily understand how this misconception gained ground. We have been in the habit of eating them between meals or at the end of a heavy dinner when the stomach was already overloaded and the digestive organs already tired out.

"Atwater, the recognized authority by both Americans and Europeans, gives the fuel content of a pound of shelled pecans as 3,455 calories. Compare this—all the figures are for the edible portion only—with round steak, 745 calories to the pound; porterhouse steak, 1,110; leg of mutton, 900; spring chicken, 505; trout, 445; cheese, generally considered the most concentrated food, 2,055; eggs, 680 a pound. As compared with other nuts, pecans have 3,455 calories; walnuts, 3,300; Brazil nuts, 3,265; butternuts, 3,165; and almonds, 3,030. Of these food units over 12 per cent is protein. The requirement of protein in the diet is from 10 to 18 per cent, so we see that the pecan is a well-balanced ration in itself."

EDITORIAL

Warren Gamaliel Harding

AS we go to press America mourns.

The leader who loved and served her well has gone to a far country.

It was characteristic of President Harding so to let his sympathy and understanding prevail as to make each citizen feel that his individual interests were bound up with those of the "government at Washington"; that government which, in the words used by Garfield at Lincoln's funeral. "still lives," despite our sorrow.

The American Food Journal is giving thought to its own particular reasons for feeling that it is an integral part of America as President Harding conceived it. Our very name gives us that right, our specialized groups of readers, food manufacturers, food technicians, food administrators and food educators, working as they are with that which was so mighty an instrument in winning the World War, are peculiarly part of President Harding's America, the America of strong men and women.

Today, we pledge anew to President Coolidge that loyalty which was President Harding's in full measure.

Advantages of Organization

"IT is becoming more and more difficult," said Secretary John H. Meyer at the recent convention of the New York State Retail Grocers Association, "to enroll new local associations. We are not alone in this if that is any consolation, for we hear the same complaint from all of the trade associations. We are holding our own but that is not enough, for while we do add an occasional local there is a frightful indifference on the part of the very retailers from whom we hear so many complaints that they need protection against their competitors."

Now these experiences of our friends in the retail group are repeated in other branches of the food field. Manufacturers' associations frequently languish and sometimes die, simply from lack of support on the part of the very individuals or organizations for whose help they were planned. All of which is one more proof of the well known fact that it often takes an unconscionable time to do good to any one against his will.

These food trades, however, which have accomplished most along the lines of organization have nothing but good to report of the increasing movement toward united action.

Which brings us to our text.

The American Food Journal has already put itself on record as sponsoring all legitimate enterprises having for their object team work on the field of food. Might not the younger and smaller of the trade associations take heart of grace if they were fully informed of the advantages that accrue from organized association? If the secretaries of all the food trade associations were to meet in the autumn, for example, for an informal conference, who knows what might result along the line of stabilized business?

What if this would mean the coming together of competitors? So much the better. The old cut throat methods that characterized business in bygone days no longer, to any marked degree, prevail. Honest competition is wholesome and stimulating. Competitors, however, have many common problems, be their product meat or wheat, milk or margarin. The meeting together for the purpose of setting on foot machinery that might help in solidifying the food industry as a whole would be pretty sure to bring results.

The American Food Journal offers its pages to any who are interested.

Better Fed Boys' and Girls' Clubs

SPEAKING before the members of The American Home Economics Association recently assembled in Chicago, Agnes Houston Craig, Supervisor of Home Economics, Springfield, Massachusetts, told of a "Better Dressed Girls' Club" which had been formed as a direct outcome of Miss Craig's own instruction in the principles of artistic and healthful dress.

Why not Better Fed Boys' and Girls' Clubs, with food manufacturers giving direct cooperation through their departments of home economics?

Such projects, whether organized in the class room, the plant or the home would offer untold opportunities for manufacturer, teacher and home maker to get together for the good of individual and public health.

As to those most vitally concerned, the youngsters themselves, their interests is practically assured. Through the combined efforts of home, through the work of The American Child Health Association, the grade teacher and the domestic science worker, the children have an excellent foundation on which to build. To offer them opportunity for working out original projects in food and health, building on their already sound knowledge of the health rules, would almost certainly result in a number of satisfactory community projects.

That the food manufacturer would have a golden opportunity for educational advertising of the highest type goes almost without saying. Whether he inaugurated the project, gaining the always ready cooperation of the teacher, or merely suggested and then fell into line under the teacher's direction, the manufacturer might rest assured that he and his department of home economics would be well repaid. Would they not, to misquote Kipling, "Have real children to work with," and in helping to build real children would he not be helping to build a real nation? And in nation building we shall, of course, "Never be tired at all!"

A Suggestion for Meeting the Wheat Situation

IN the August, 1923, issue of the bulletin of The National City Bank, appears the following:

"While new political leaders are filling newspaper columns with their plans for giving relief to the wheat-growers from the effects of low prices for that cereal, at the expense of the United States Treasury, the business men of the regions where wheat is the principal crop are actively cooperating for the promotion of a much more effective remedy, by the encouragement of diversified farming."

Continuing, the writer says:

"It is an opportune time for the movement for the dairy interests of the country are not depressed. The dairy farmers of Minnesota are in fairly prosperous condition even now. A banker in Hutchinson, Minnesota, writes to say that cattle, hogs, grain and minor farm products are bringing prices which are barely equal to or less than the cost of production, but that "the dairy cow comes to the rescue, producing butter-fat that is selling today at a profit and enabling the dairy farmer to tide himself over the present unprofitable period to a better day, we hope, when his other products will also bring him a reasonable profit."

FOOD AND HEALTH EDUCATION

A Department of The American Food Journal
Edited by WINIFRED STUART GIBBS

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East Harlem Teachers Win Scholarships

Health Organizations Award Prizes for Methods of Teaching Health in Connection With Class Room Activities

WITH the cooperation of the Health Education Division of the American Child Health Association, which for some time has been untiring in its efforts to stimulate the interest of teachers in methods of health teaching, the East Harlem Health Center, during the last four months of the school year, has conducted a health contest among the public school teachers in Districts Number 12 and 14, New York City. Two scholarships were awarded by the New York County Chapter of the American Red Cross for the work carried on in that community—both of these, as it happens, to teachers in Public School Number 78—and four teachers were given honorable mention, the awards being based on methods of teaching health to children in correlation with their regular school work.

Through the courtesy of the East Harlem Health Center and the Health Education Division of the American Child Health Association, we are able to publish on the following pages the prize winning manuscripts, by Alice Lynch and Helen V. O'Connell, as well as illustrations of their work and of that submitted by other contestants. Thirty-four teachers entered the contest, and twenty-one of these submitted manuscripts, of which twelve were voted on. The teachers receiving honorable mention were Florence Gurnee and Margaret Quigley, of Public School 78, Louise Lefebvre of Public School 102, and Mrs. Florence B. Gual of Public School 39B.

Helen V. O'Connell
Scholarship Award

The contest was launched by Kenneth Widdemer, executive officer of the East Harlem Health Center, at the suggestion of the American Child Health Association, its purpose being to improve the health and happiness of children in school districts 12 and 14 of New York City, by introducing health teaching into regular class room activities, regardless of subject. John T. Nicholson, superintendent of schools in these districts, called a mass meeting of the teachers in March, addressed by Emma Dolfinger of the American Child Health Association, who offered the assistance of the organization in making the project a success. The teachers were urged to teach health as a positive ideal, presenting it in terms of Beauty, Strength and Joy; to form health habits, as well as to teach facts; to use the data obtained in weighing and measuring; to create and maintain interest in the formation of health habits; to enlist the interest and imagination of the child and encourage original and creative expression through posters, scoring devices and health books. Group meetings in the schools were addressed at various times by Miss Dolfinger and Mrs. Auleen Robbins, of the American Child Health Association. The scholarship committee included Henry Levy, of Public School 39B, chairman; Miss Dolfinger; Dr. Nicholson; Emma Haggerty, principal of Public School Number 102, and Kate Condon, of Public School Number 103.

The Health Project in the Lower Grades

How the Younger Children Traveled the Road to the Land of Health and Happiness and Their Experiences on the Way

By HELEN V. O'CONNELL
Public School 78, New York City

SCHOLARSHIP AWARD

SINCE April 1st, I have played the Health Game with my 2A class and I have found that it has made them cleaner, healthier and happier children. Children love to play and are naturally interested in all that concerns themselves personally. By combining these two instincts it has been possible to carry out a successful plan of health education.

This is the plan that I followed: I asked the children if they would like to take a trip to the Land of Health and Happiness. "The Land of Health and Happiness is a beautiful place full of healthy, happy children, and is guarded by a fairy. For some boys Healthland is very near, for others it is far away, but we will all try to get there. Once there we are going to stay. So we must begin now to learn to live as the Healthland children do. This is what they do:" Then I presented and explained the Rules of the Game. There was a general response from the class. Each child was eager to tell how many of those things he was already doing. They promised to follow the rules and be ready to start on the journey next day.

That afternoon, I sketched on the blackboard across the back of the room a train en route to The Land of Health and Happiness. The latter was presented as follows: A green field, flowers, birds, blue sky; a Health Fairy showering blossoms upon happy children. When the children came in next morning they were delighted. They talked about the train, about the fairy, and about the children. Their attention was especially directed to the children. How clean, strong, rosy-cheeked and happy they were! Unconsciously they began to compare themselves with the Healthland children. I think many of them vaguely realized their short-comings.

All were not ready for Healthland, nor were all equally unready. So there had to be stations along the way. We decided to have three stations. The first station we called Weight and represented the three factors which produce weight: Food, Sleep and Exercise. Under food, we placed pictures of fresh fruit and vegetables, bread, butter, cereal, milk and cocoa. Under sleep and exercise, we placed appropriate pictures. The second station we called Teeth, because no child could go to Healthland unless he had clean, strong teeth. At this station there was a dentist; also a toothbrush and tube of paste for every boy. The third station we called Cleanliness. Here could be found soap and towels, a brush and comb, clean clothing, polished shoes and a handkerchief.

It now became necessary to examine the class in order to place each boy where he belonged on the road to "The Land of Health and Happiness."

The first step was to weigh and measure each child. The children had no idea how much they weighed or measured, or that there was such a thing as a standard weight for them. We made a game of being weighed. I allowed them to guess their own and each others' weights. Then I explained that weight depended upon size and age. I arranged them accordingly, told them the approximate weight of the smallest and the largest boy and allowed them to guess again. Their interest was thoroughly aroused, and they could hardly wait until next day to be weighed and measured.

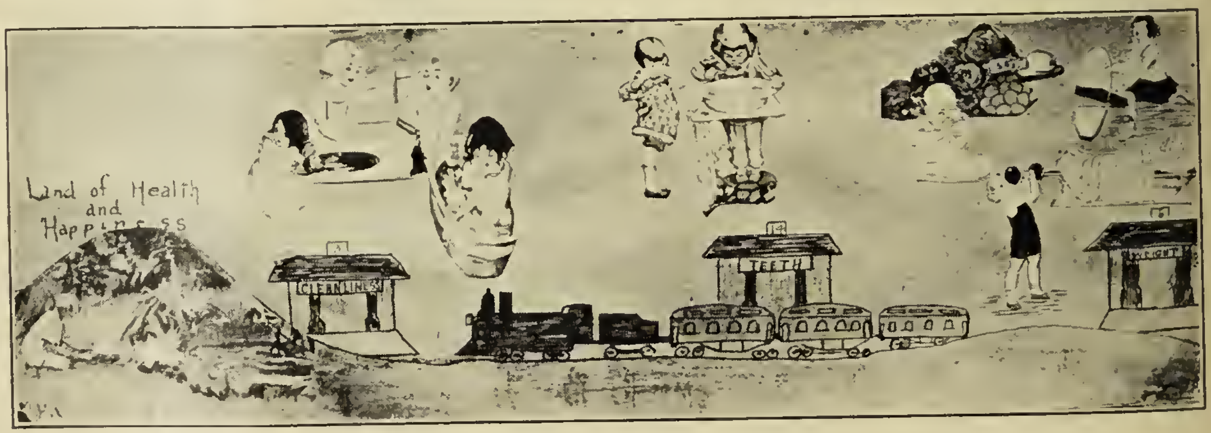
Each child received a card containing his weight and height and the standard weight for his height and age. The children were grouped and the number of children below standard was placed above the first station. These children had to remain there until they began to gain. Forty-four children were weighed and measured. Of this number twenty-six were found to be up to or over the standard weight for their age and height and eighteen to be between the standard and 10 per cent below the standard. The three children most under weight were admitted to the nutrition class of the East Harlem Health Center. The others received special instructions for their parents, urging them to cooperate by supplying the right kinds of food.

At the end of the first month, the children were weighed again. Twenty-two children had gained. Seven of these were children who had been under weight at the first weighing.

An inspection of the teeth came next. At the first survey only about twenty per cent (20 per cent) of the class owned and regularly used a toothbrush. Of course a boy who had no toothbrush must remain at station two and could never reach Healthland unless he obtained a toothbrush. They needed no urging. Before the end of the week every child in the class had a toothbrush and was taught how to use and care for it. Thirty-six children had their teeth cleaned by the nurses from the Columbia School of Oral Hygiene. Of this number eighteen were referred to the dental clinic for further treatment. Unfortunately many of these children have not as yet received the necessary treatment. The children are doing their part. I feel sure that the toothbrush habit has been fairly well established. But it has been difficult up to this time to make the parents realize the necessity for immediate treatment. They are just beginning now to take their children to a dentist. However in the whole class there have been thirteen extractions and twenty-five fillings.

At the beginning of the game, there were seventeen children at the third station. Now there are only three children at that station.

The boys who passed all three ex-


Land of Health and Happiness
CLEANLINESS
TEETH
WEIGHT

The "Land of Health" as drawn by Miss O'Connell for her class aminations successfully were admitted at once to the Land of Health and Happiness. At first there were only five, now there are twenty-one. A gold star represents each boy.

Briefly the number of children at each station during the game was as follows:

	Health-land	Clean-liness	Teeth	Weight
Apr. .1	5	17	24	18
May 1	13	8	18	11
May 31	21	3	14	6

Except in the last case the total number of children does not equal the register, because some boys had to remain at two stations or even three at the same time. For example: A child who was under weight and who had bad teeth had to remain at stations 1 and 2. For him there were two obstacles to be overcome before he could go to Healthland. By the end of the term we expect 100 per cent of the class in Healthland.

I have used the following devices to interest the children in forming health habits.

Each child was allowed to make an individual health book. We discussed suitable headings and decided to use headings suggestive of the health habits to be formed. For example, "I took a bath today"; "I drank three cups of milk." The children were urged to look for and bring to school any pictures that they could find to illustrate each health habit. Time was allowed during the drawing periods for these pictures to be cut out and pasted into the books. The children were allowed to use their own judgment in choosing and placing the pictures. The brighter children helped the others. At regular intervals the class was questioned and a record kept of the progress made in the formation of good health habits. The record consisted of stars in each child's book. From time to time, I allowed the children to take home their health books. Many parents expressed a keen interest in their children's work. Some of the parents came to school to see our Health Project. One parent. much astonished, came to ask what I had done to Mossis to make him want to go to the dentist. When I told her that a trip to the dentist was all that was keeping her son from Healthland she easily understood and promised to take him.

On the afternoon of June 1st we held Health Day exercises in our room. The parents were invited to attend. Some of the children talked about The Land of Health and Happiness and described what they had done to reach it. Others talked about the stations. Two or three children told original fairy stories about Healthland. We, played our Health Games, sang and recited poems. Several children exhibited their health books.

I have correlated my health teaching with lessons in the following subjects:

Nature Study

Study of fruits and vegetables, apple, orange, carrot, beet, potato, beans, growing plants compared to growing children.

Drawing

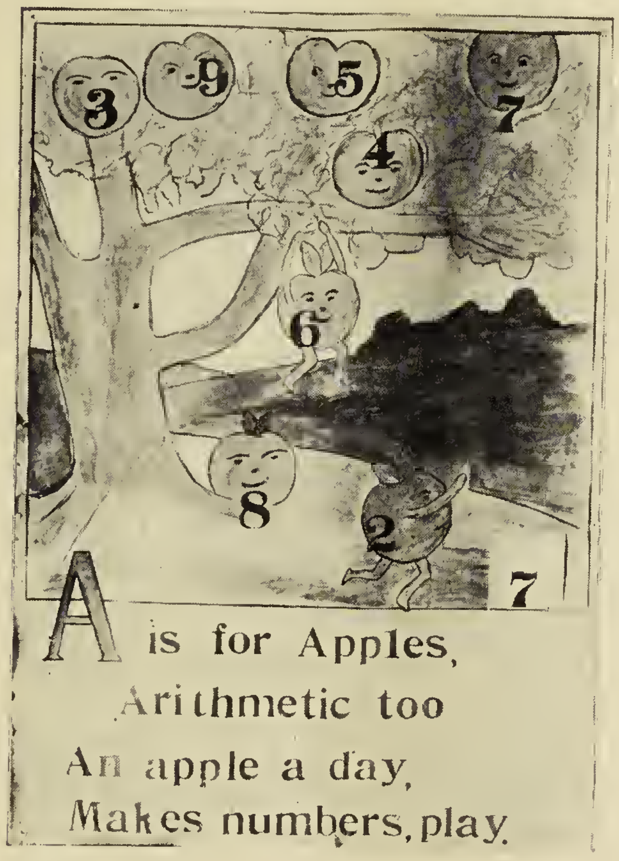
Object drawing. (Fruits and vegetables above.) Toothbrush, paste, free cutting, and lettering in Health Books.

Oral Composition

Conversation lessons about food, recreation, sleep, exercise and cleanliness.

Arithmetic

Number Games; Apple Game; Potato Race (adding and subtracting numbers); Counting number of stars in Health Books; number of children with clean hands, etc. Playing store —Healthland Market—buying and selling good food. Use of money. (Money is not clean. It must be handled carefully.) I am submitting the questions asked in the health project in arithmetic, and the charts for the number games mentioned.



Every apple on this tree is marked with a different number. At one side hang a dozen or more circles on a string, each with its number also. The first child who picks out a circle and correctly adds, substracts or multiplies the number on each apple by the one on the circle, gets the apple as a reward

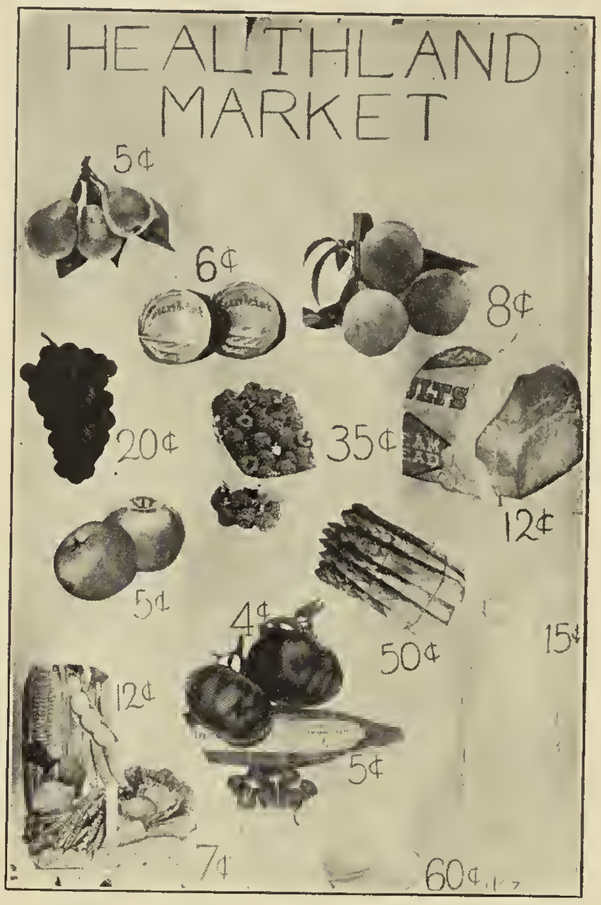
Physiology

Name and location of heart, stomach, lungs, bowels. Relation between feeling well and good elimination. Structure of teeth. Function of teeth. Digestion.

Games

1. A Visit from the Health Fairies. Six children are chosen to be fairies. "We have come to talk to you about Healthland, etc." The children seated may ask the fairies any questions they wish, such as: "What do children in Healthland eat?" If a fairy cannot answer the question he must take his seat. (Only clean children may be fairies.)

2. The game of "Earth, Air, Water," from the Kendall Reader. Only the children must say, "Breakfast, Dinner or Supper." The child called upon for "Breakfast" must name something good to eat for that meal before the leader counts ten.



"Going to market" as a means of teaching food values. A storekeeper is chosen from the class and the other children are given turns to go to market and purchase food (mentally) at the prices given on the chart

Outline of Subject Matter

I. Physiology

Terms: Head, Trunk, Limbs. Name, location and function of: Heart, Lungs, Stomach, Bowels. (A single sentence about the function, for example "The heart pumps the blood to all parts of the body.") Teeth: structure (for biting, chewing, etc.).

II. Weighing and Measuring

Individual weight record cards or class record. Special attention to children who are underweight. Instruct children in gaining.

III. Teeth

Inspect teeth at beginning of term. Report to parents. Instruct children in going to dentist and in brushing teeth. Check up on improvement. Individual toothbrushes.

IV. Sleep and Exercise

Sleep ten to twelve hours, windows open. Rest before and after meals. Play in open air. Check up and record improvement. Compare body to an engine.

V. Personal Cleanliness

Baths, washing hands before and after eating. Care of hair, clean clothing, fingernails. Use of handkerchief. Clean comb, brush, toothbrush, towels.

VI. Safety

(A) Personal Safety

Before crossing street, "Stop, Look, Listen." Cross at corner. Keep away from moving vehicles; buildings under construction; matches, waterfronts. Play on the sidewalk.

(B) Public Safety

Avoid throwing refuse into streets. Don't throw stones or break bottles in the street. Keep away from vehicles parked against the curb. Don't make any unnecessary noises. (This can be taught indirectly as occasion demands. Suggest the idea of emulation.)

VII. Food

Need of body for good food. Fresh fruits and vegetables; Cereals; Bread and butter; Cocoa and milk; Plenty of water; Danger of cheap candy or dirty food; Keep food covered; Danger of house fly.

The Game of Health in Upper Grades

Health Work Related to Other Studies in New York City Public School

By ALICE LYNCH

Public School No. 78, New York City

SCHOLARSHIP AWARD

1. Attitude of children toward the Game of Health

THE girls of class 5B5 enjoyed the Game of Health in a very wholehearted way from the start. It has appealed to them immensely, as shown by the keen interest which they displayed in every phase of the work.

The class shows a gain in health by their general attendance at school, by their more happy smiling faces, and their better attention to any work in hand. There is also a noticeable gain in weight. If any one does not wear a smile, we tell her we are sure she must have forgotten to follow up one of the health rules, such as neglecting the proper number of hours of sleep the night before, or the drinking of the correct number of glasses of milk.

As a result the children are most eager to obey the rules of the game whereby they are sure to gain all that health means—beauty, strength and happiness.

II. Physical Improvement Made by the Children

(a) Weighing and Measuring:

1. Number of children weighed and measured—43.
2. Number of children up to or over standard weight for their age and height, up to and including 15 per cent overweight—30.
3. Number of children between standard and 10 per cent below standard weight—11.
4. Number of children who have gained since first weighing—18.

The methods which I have used to interest children in gaining are: (1) Class graph showing what the standard weight of the class should be, weight of the class at first weighing, and weight of class at a later weighing, showing improvement under the Game of Health; (2) individual graphs for children's health books showing what individual child's standard should be, what she weighed at her first weighing, at her second weighing and finally at her last weighing; and (3) the written statement at the bottom of the report cards showing the parent the child's condition of weight, which were returned to school after having been signed by the parent.

(b)		Tonsils	Eyes
Teeth (Extractions	4		
Teeth (Cleanings	—37		
Teeth (Fillings	5	2	2

To interest children in the correction of these defects, I have told them what a wonderful boon and source of health they have at hand in the health centers, the clinics and the many other modern means to health, the opportunity for which never came to their parents.

Some of the children who belong to the diet and other classes in the health center and are doing interesting work along health lines tell the class in school about the pleasant things they learn to do at the health center. This has aroused the interest of others in the class to go with these pupils and join the class. Others tell of how they have had their teeth treated and display with pride the "priceless pearls" in their mouths, thus making those who were not in their class, so far as teeth were concerned, anxious to join them by getting busy and going to the clinic.

The Health Honor Roll is another means I used to interest children in having corrections made.

III. Correlations of Health Teaching With Subjects of Grade 5B

(a) Arithmetic

Class combined 5B mathematics with a health project such as the following—5 oral and 5 written examples:

Oral

(1) If 1 glass holds ½ pint and you drink 3 glasses of milk a day, how many pints of milk do you drink?
(2) 4 glasses of water equal how many pints?
(3) Express in quarts the amount of water you should drink each day.
(4) How many quarts of water a day should your class drink? (The register of the class at that time was 44 girls.)
(5) If 1 child drinks 3 pints of milk a day in order to be happy and strong, how many quarts a day should 4 children drink?

Written

(1) A child drank 1¾ quarts of milk the first week and, after hearing a lecture on milk, drank 6⅜ quarts the second week. How much more milk did she drink the second week than the first?
(2) If 33 children made the same gain in milk drinking, as the child mentioned in problem 1, how many more quarts were drunk the second week than the first?
(3) If the register of the class was 44 and 33 made the above gain, what fractional part of the class showed an improvement?
(4) What decimal part of the class showed an improvement?
(5) In the above class there was also an increase in water-drinking. If a child drank 3 pints a day, how many quarts does she drink in a week?

(b) Civics

Children study the department of health, the city's protection of its food supply, the water department, and how the city prevents and eradicates disease, emphasizing in each case its relation to health.

(c) Composition

Class wrote original compositions on the following subjects:

(1) Chew-Chew's Visit to Our School.
(2) What Chew-Chew Taught Us.
(3) The Value of Milk.
(4) How I Increased My Weight.

(d) Dictation

Class took in dictation a note to their parents asking the latter's cooperation in the children's efforts to increase in weight and to gain in health.

(e) Drawing

Children made health posters and lettered health slogans. In cylindrical object drawing we used milk bottle and a glass tumbler. For spouts and handles we used a milk pitcher, instead of the tea-pot.

(f) Geography

In the study of industries and products of the United States, those products which are the means to good health are discussed from that viewpoint; i. e., in the study of the state of New York we emphasized the dairying industry in its relation to health, and the fact that that state leads in the production of dairy products, all of which are conducive to good health.

In studying the different groups of states we emphasized the agricultural industry which makes it possible for us to have fresh green vegetables and fruit, i. e. (1) New Jersey is known as the Garden State, noted for its vegetables and fruits. (2) The state of New York is noted for its apples. (3) The north central group of states is noted for the grains and cereals grown there.

A health map of the United States showing health products produced was made by each pupil.

(g) History

Current events—A study of the life of Pasteur. This year was his centenary.

(h) Hygiene

Daily Morning Inspection

Children can recite items of daily routine and items of daily inspection which they have learned and put into practice.

Children read and discuss lessons in hygiene books entitled "Our Wonderful Bodies and How to Care for Them," edited by Charles E. Merrill, as outlined for each week of the term in the hygiene syllabus for 5B.

Physiology Correlated with Hygiene

Lessons according to course of study in syllabus on physiology taken up in their relation to health.

(i) Memory

Poems relative to health which children studied from health readers or from their own health books, in which they had copied the poems.

(j) Music

Health songs sung during opening exercises in the morning.

(k) Nature

Children trace milk from its production to its purchase by the consumer.

Children trace vegetables and fruits from the garden to the table.

Children study cereals in the same manner.

In all these studies special emphasis is laid on the significance of its relation to health.

(l) Penmanship

Use of slogans in lessons.

(1) HHH Health hhhhh.
Health means happiness.

(2) MMM Milk mmmmm.
Milk is a great means of health.

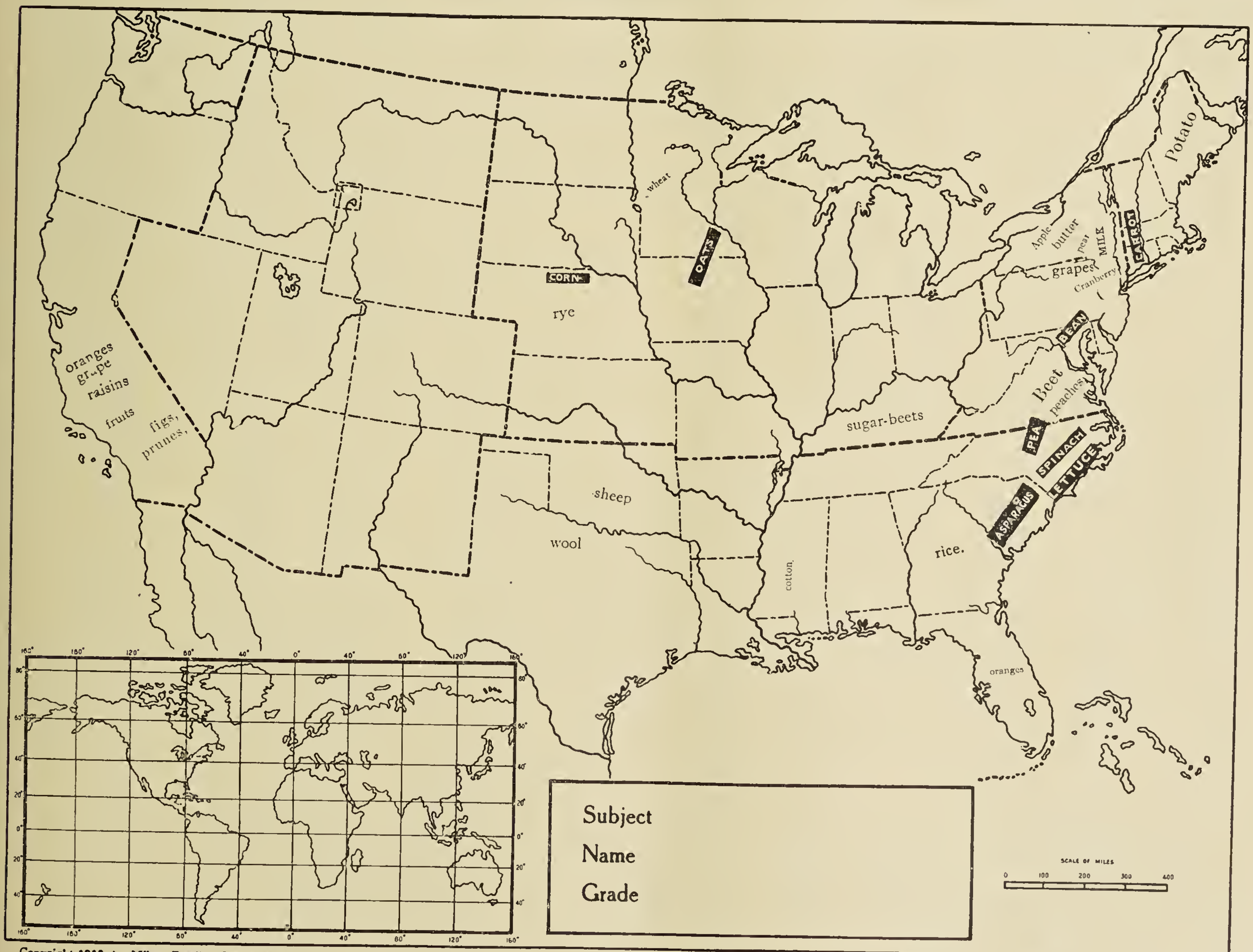
(3) GGG Green ggggg.
Green vegetables make us strong.

(4) WWW Water wwwww.
Water is good for us.

(m) Physical Training

Special attention paid to posture at all times. Posture tests given once a month in standing, marching and exercises, the result recorded for the class record on a posture chart.

Class goes down to Jefferson Park for game period twice a week. Class



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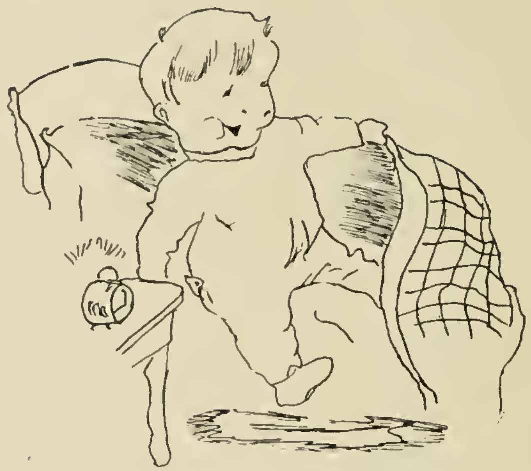
A map showing health products in the United States, used in Miss Lynch's 5B5 class



He hears the clock and up jumps Ted
As prompt as can be out of bed

And sister too on getting up
Her limbs will stretch just like the pup.

To make her teeth gleam white she'll rush,
For twice a day sis plies her brush

And then, not bending either knee,
Her toes she'll touch quite easily

One reason Ted so clean appears.
He always soaps behind his ears.

And when he's washed and done his hair
Most carefully his nails he'll pare

Health Hints to Young Beginners. Some suggestions from "Secrets," a booklet wherein Miss Kelly, of Public School 102, New York City, teaches her class how to start the day right

play games out in the open air and in the sunshine.

(n) Reading

Children read lessons in hygiene books.

(o) Spelling

Words used in the Game of Health given in daily oral and written spelling drills: as

vegetables
health
happiness
strength
fruit
cereals
weight

The Class Health

The class, as a whole, has made "The Class Health Book of 5B5," which is composed of lettered slogans, illustrations, and some printed matter relative to the value of milk, of water, the care of the teeth. This has been contributed by the children of the class who have gathered it from magazines, booklets, put out by such companies as Borden's and Colgate's, or seed catalogues. The children feel very proud of this class book. The class also has made individual health books into which they put the rules of the Game of Health, and all matter brought in by themselves which is not used in the Class Health Book.

Our class has formed an informal health club. Three health captains who represent all that health stands for were appointed to be at the head of this club. They take charge of the daily morning inspection under the supervision of the teacher. These three captains attend a meeting of the Health League held in our school every Wednesday afternoon at three o'clock conducted by the school nurse. These captains report to the class on Thursday morning what they heard and learned at the Health League meeting. There are two charts displayed in our class room relative to morning inspection. One contains the items of daily routine and the other the items of daily inspection. The class knows these items, having read and studied about them in detail from their hygiene readers, "Our Wonderful Bodies."

Each morning the teacher checks up for the preceding day the time of retiring, the vegetables eaten, and the amount of milk consumed by each child.

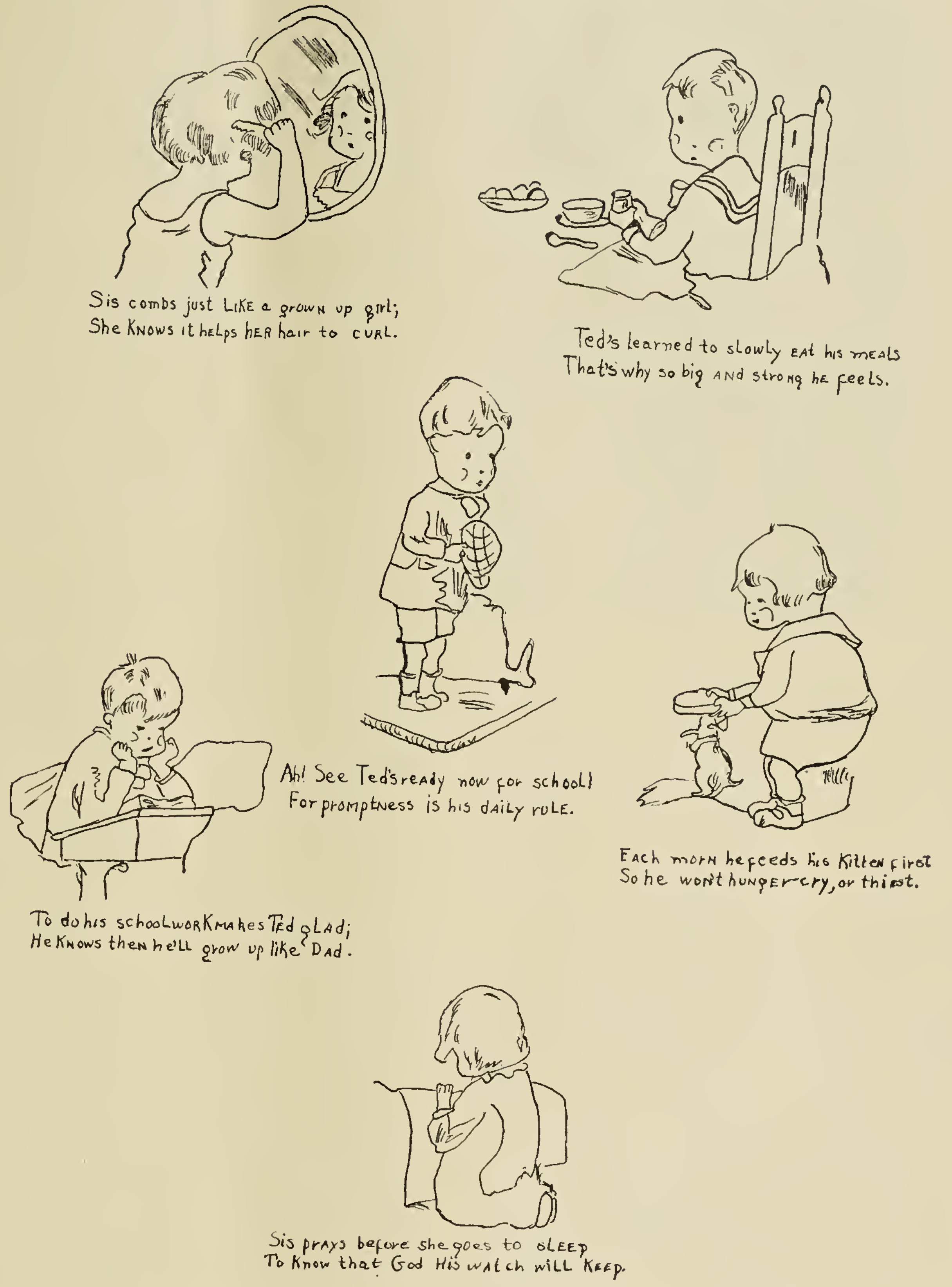
A class weight chart in the form of a graph was made, as were also individual graphs for the children's health books. Children who showed a gain were asked to tell the class what they had done to increase their weight. Those who were underweight were urged and encouraged to use these means.

A health game used in the class and played by the pupils and teacher was the Drink-Water Game, in which each child drank three glasses of water daily while in school at ten o'clock, eleven o'clock, and two o'clock.

A blackboard border was used at the top of the blackboard showing a row of milk bottles, one for each child who is drinking at least three glasses of milk every day. In the first week of the Game of Health, only ten children were drinking the required amount of milk. The following week showed a gain of six "milk drinkers," the following week a gain of five, and so on, until there are now thirty-eight "milk drinkers" in our class. Each child who is a "milk drinker" is given the honor of drawing her milk bottle on the board, thus increasing the milk bottle border by one. The teacher places the initial of the child who has drawn the bottle beneath her respective bottle. The bottle border is illustrated below. The colon between the bottles separates the "milk drinkers" of one week from those of the following week, thus showing the gain in the drinking of milk in the class. "B" shown below represents bottle drawn by child on blackboard.

B B B B B B B B B B: B B B B B:
A F M G S V F C S C: M B R Y A:

B B B B B: B B B B B B B:
H A C M G: A L A M I S E:



Sis combs just like a grown up girl;
She knows it helps her hair to curl.

Ted's learned to slowly eat his meals
That's why so big and strong he feels.

Ah! See Ted's ready now for school!
For promptness is his daily rule.

Each morn he feeds his kitten first
So he won't hunger-cry, or thirst.

To do his schoolwork makes Ted glad;
He knows then he'll grow up like Dad.

Sis prays before she goes to sleep
To know that God His watch will keep.

Ted and Sis, their day well begun, continue in the path of virtue

The accompanying health chart, "A Day's Cruise to Healthland on the Good Ship 'Smiles'" was placed on a blackboard in our class room with a picture illustrating a rule of health placed to the right of the corresponding rule.

Another chart entitled "Stopping Points on the Main Road to the City of Health" was made on oaktag and displayed in the classroom.

A Health Honor Roll was kept for the class. It started with only nine pupils. Now thirty-one pupils have their names recorded on it. The items considered for this honor roll are attention to the rules of the Game of Health, the items of daily routine, the items of daily inspection, posture, weight, height and general health as shown by attention in school and attendance at school.

Children are urged to correct their physical defects by making use of the East Harlem Health Center and the various clinics.

Many slogans composed by the children were lettered by the class who enjoyed learning reciting them. The class entered into the spirit of the slogans very enthusiastically. Some of these slogans are:

Health means beauty.
Health means strength.
Health means happiness.
Milk is the ideal food.
Water is good for us.

The class made a report of health habits which they had formed this term.

IV. Steps Taken to Carry the Message Into the Home

The following is one of the ways in which I have tried to carry the message of the child's health into the home. Each child in the class has taken a dictated note home to her parent asking the latter's cooperation in the child's Game of Health. The child requests particularly that her parent aid her by giving her daily meals containing milk, vegetables and fruit. I have urged the children to take lunch at home so that now all except one child go home for lunch unless the day is stormy. This child happens to be on the Health Honor Roll. Her lunch consists of bread, butter, a pint bottle of milk, and a piece of fruit which is usually an apple. Her mother goes to work, and so, from necessity, she must take her lunch to school. The mother cooperates in the evening by giving the child vegetables as part of her evening meal.

These notes which were dictated by teacher during a dictation lesson were taken home and signed by the parents, showing their willingness to cooperate. The notes were then returned to school.

Another method I have used to carry the message into the home is the report card. If the child is of the right weight for her height and age, a record of this statement is made in blue ink at the bottom of her report card. If she is underweight or too much overweight, this fact is recorded on the report card in red ink.

V. Essential Subject Matter for Grade 5B

(1) Hygiene readers to be used for the hygiene periods as well as supplementary reading periods.

(2) Typewritten or mimeographed copies of the rules of health, the items of daily routine and the items of daily inspection should be given to the pupils who are to be held responsible for the learning of this subject matter.

(3) Drawing models for the grade should include health posters and lettered slogans.

(4) Spelling books should contain a fair per cent of words pertaining to the Game of Health together with some memory gems, matter for lessons to be used in dictation, as well as lessons illustrating a point in the study of English, bringing forth also a vital point in health which could be taken twice a month.

(5) Composition books containing among their models a few compositions illustrating a point in health, and suggesting health topics for like treatment. These topics concerning health could be used for compositions once a month.

(6) Charts showing the rules of the

Game of Health and other phases of health drawn on the blackboard or displayed around the classroom.

(7) Plays to be dramatized once a month for a morning assembly.

(8) Penmanship lessons which bring in health slogans.

(9) Nature lessons using a subject matter taken from health topics such as the study of milk, from its producer to its consumer; the study of cereals in the same manner.

(10) Geography lessons such as the study of cotton from its production, through its different stages to the finished product. The uses made of cotton studied, emphasizing those pertaining to health, as the use of cotton for clothing at the proper time, and cleanliness.

(11) Arithmetic projects combining the work of the grade with health matter, to be used once a week.

VI. A Special Program to Increase Interest of the Class in Healthful Living

On Health Day which we assigned as April 19, the entire time is given over to a health program for the whole day. We single out this day from the rest by having a thorough examination of the class for any sort of physical defects, using such tests as the Metropolitan for eye defects. After the class has been examined, every subject studied during that day is taken up with special emphasis on the health side of the subject in hand. For instance, the work in arithmetic that day is a health project, every example pertaining to some rule or phase of health. In composition the topic in hand is a health topic. For reading we take matter from our hygiene readers. For music, we take a health song. For memory work, we take health poems. Between two-thirty and three o'clock on Health Day, each child told how she had played the Game of Health fairly. The children on the Health Honor Roll were allowed to come to the front of the class room and recite health stories, poems, or songs. They enjoyed the day immensely. Many have since made a strong effort to be on the Health Honor Roll and have succeeded.

Commercial Nutrition Work among Children

Borden Company Conducts Experiments and Class Work in Cooperation with Health Organizations and Schools

By HELEN RICH BALDWIN, B.S.

Director of Nutrition Department, The Borden Company

Mrs. Baldwin, who has prepared the following article telling of the work of the Nutrition Department of The Borden Company, is a graduate of the Nutrition Department supervised by Dr. Mary Schwartz Rose, Teachers College, Columbia University, in 1921. During the following summer she was in charge of nutrition work in the Bronx District of the American Red Cross, and later became the nutrition editor of the Junior Home Magazine. She has organized and developed the Nutrition Department of which she is now director.

IN the past few years the interest in malnutrition among children has grown with great rapidity. Specialists from educational and medical fields have allied to study this problem and have accomplished much toward improving child health. Enough cannot be said in praise of the health organizations, nutrition workers, teachers and nurses who have brought health and happiness to thousands of children.

In recent years this movement for promoting better health for children has reached into commercial fields. Health and welfare departments have been organized with trained workers on their staffs. These departments have much to offer in the matter of literature, posters and materials which can be used advantageously in class work. By correspondence they give free service throughout the country to mothers and children who desire authoritative health information and they assist teachers and nutrition workers with suggestions regarding health programs for nutrition classes.

It is indeed a highly commendable spirit which prompts a large commercial organization to support such a department. I am now speaking of the commercial companies which are urged by the definite purpose of bringing better health to children as well as increasing the sales of their product, and not those who maintain a health department purely for the sake of its advertising value.

The Nutrition Department of the Borden Company has selected its workers because of their knowledge of nutrition, experience in educational fields, personality, appearance, business sense and ability to deal with children and to cooperate with health workers in schools, health organizations, clubs and factories. We attribute our growth and success to the firm foundation of our motives and to our capable staff which is living up to these motives.

The "Morning Milk Class" in Public School 38

The development of this department will no doubt be of interest.

In December, 1921, our first experiment with malnourished children was conducted in Plainfield, N. J., in cooperation with two of the public schools. A group of sixteen children (10 per cent or more underweight) was recommended by the school physician from each school. Educational, nutritional and health work was carried on with both groups. Mid-morning feedings were given for five days a week during the experimental period. Group A was given one and one-fourth cups of fluid milk and Group B was fed an equal quantity of diluted condensed milk of the same caloric value as the former. The experiment was conducted for a period of twelve weeks, from December 1, 1921, to March 1, 1922.

Group A gained 28.37 pounds and Group B 34.62 pounds. The total gain in weight for Group B, which had the condensed milk feedings, exceeded the total gain of Group A by 6.25 pounds.

From the reports of the school teachers we were convinced that the children had shown mental improvement as well as physical. We were also assured that the children found the taste of the condensed milk agreeable.

These results impressed us very favorably but we knew that we would have to go farther than this to convince the scientific world. So, with the permission of the Child Hygiene Association of New York City, we started our second experiment in Public School Number 38. The medical work was done in the out-patients dispensary of St. Vincent's Hospital and supervised by Dr. Louis F. Sanman. Forty-six children (10 per cent underweight) were divided into two groups as before. This time the children were weighed, thoroughly examined, blood counts made and X-ray pictures taken of the bone, before the first feeding was given.

Educational, nutritional and health work was carried on with both groups and the mid-morning feedings were given for five days a week during the experimental period. Group A was given 200 calories of bottled milk (pasteurized) and Group B was fed an equal quantity of diluted condensed milk of the same caloric value. The experiment took place during the months of April, May and June. At the end of this time the children were again weighed and examined, blood counts taken and X-ray pictures taken.

Group A (fluid milk) had gained thirty-eight and one-quarter pounds. Group B (diluted condensed) had gained thirty-eight and five-eighths pounds, the gains in weight for the two groups being almost identical. The X-ray pictures showed improved bone conditions in both groups. There was a greater increase in the number of red corpuscles in the blood in the Eagle Brand group over the whole milk group. This increase in blood corpuscles would tend to show that the bodily conditions of the children in this group had improved more than those in the whole milk group. The physical examinations showed improvement for both groups.

The foregoing results, together with the conclusions drawn from our first experiment and the medical data on condensed milk compiled by Dr. M. J. Rosenau, Boston; Dr. Alfred Hess, New York City; Dr. Phillip Hawk, Philadelphia; Dr. Max Wolf, and Dr. Carl P. Sherwin, of New York City, and the experiences of the Near East Relief workers in Europe with hundreds of thousands of malnourished children who had been brought to normal health by the aid of sweetened condensed milk, convinced the Borden Company that they had a health food to offer the malnourished children of the world. To bring this health information to the public we proceeded along two lines—personal contact through our nutrition workers and correspondence and health literature through our office force.

Helen Rich Baldwin, B.S.

A dramatization of "The House That Jack Built"

From the beginning the Nutrition Department has been ethical in its procedures and has in every way possible tried to cooperate with health organizations. In general the health organizations have been broad-minded in their attitude toward us and we have been asked to return and continue further work. Our work has not been centered in New York City but has reached out into different sections of the country. During the past two years our nutrition workers have been affiliated with the following schools, private institutions and health organizations: the Public schools of Plainfield, N. J.; Public School Number 38; the New York Diet Kitchen Association; the Backyard Playground Association, and Hudson Guild, New York City; St. Anne's Orphanage, the Hebrew Free School, Academy of the Sacred Heart, and School of the Sisters of St. Ann, Worcester, Mass.; Wesley Mission, Dale Avenue Settlement House, Fountain City School, Knoxville, Tenn.; the Anti-Tuberculosis League and Old Forge Public School, Scranton, Pa.

In the majority of these institutions we have conducted or are now conducting nutrition classes which meet for twenty consecutive weeks. The order of the lessons taught are as follows: general hygiene, cleanliness, fluid milk, sweetened condensed milk, cereals, fresh air, fresh fruits, posture, vegetables, sleep, dried fruits, teeth, tea and coffee roll, model breakfast, model dinner, model supper, "The Cemetery" (a lesson where bad health habits are buried), "Living the Right Kind of Day" (a lesson where good health habits are reviewed) and graduation. During the period in which this health class is conducted home visiting is done where home cooperation is needed.

This Foe Sits in Every Classroom

MUCH has been said in these columns of the evils of malnutrition. Are you as a teacher prepared to enlist in the national crusade against a menace which lurks in every classroom and seriously threatens every community?

The teacher is in a strategic position where she can influence both the child and his parents if she will. Young children really depend on their teachers more than on any other adults with whom they come in contact. Mothers are only too glad of your help too.

Begin the serious study of this vital subject. Learn how you can help your children — actually make them over physically and mentally.

The Nutrition Department of the Borden Company will help you. It will put you in touch with the right books to study. It will supply you with literature, with material, and with an actual manual for giving health talks and conducting nutrition work.

The most complete health literature

The Borden Company gets out the most complete health literature ever provided by any commercial company, prepared from scientific experiment and research. Two years ago this company began to experiment with the treatment of malnutrition among school children. This condition is alarmingly prevalent. About *one-third* of our total child population is underfed and undernourished. How can any teacher hope to turn out record classes with such a health handicap as this?

Having observed about 500 malnourished school children, the Borden Company has discovered that with proper observance of fundamental health rules and the addition of Borden's Eagle Brand Condensed Milk to the child's daily diet, malnutrition can be overcome or prevented.

Eagle Brand is so valuable in the treatment of this dangerous condition because it is rich in certain essential factors. Eagle Brand is pure milk and cane sugar combined in the special Borden way. It contributes all of the elements the growing body craves in a very digestible form. It is vital food which the child cannot do without.

Write for this literature

The Borden Company,
Borden Bldg., New York.

Please send me literature checked:

- ... 20 Suggestive Lessons for Nutrition Classes
- ... An Interesting Experiment with Malnourished Children
- ... Keeping Your Child Fit
- ... The Adolescent Girl
- ... Menus for Little People
- ... Height and Weight Charts
- ... Health Records
- ... The Milkarpie Stories

Name ....

Address ....

Children with physical and dental defects are taken to clinics for correction. Our classes stimulate child interest by the personality of the nutrition workers and by means of posters, games, stories and health playlets.

The work in the home office is varied. We attend to thousands of letters: from mothers who have particular problems regarding special diets, the planning of nourishing menus for children difficult to please, and the peculiarities of their children's health; and from teachers requesting assistance and suggestions for the conducting of their health classes. All of this correspondence is given personal attention and authoritative information by a competent office force.

Our literature, we believe, gives a mother complete working material to help her with problems of child nutrition. All of the information obtained from our experimental research and experience with hundreds of malnourished children has been written up in a form easily understood by the average mother.

A mother sending in to the Borden Company for material on nutrition receives the following:

"Keeping Your Child Fit," a booklet which tells her the dangers of malnutrition, what it is, how to recognize it and means by which it can be overcome.

"Menus for Little People," a booklet showing how to plan balanced menus and a sample menu for every day of the week for children between the ages of two and six.

"Adolescent Girl," a booklet for the girl between eleven and fifteen years of age, which encourages her to live up to health and food habits during this period.

"Johnnie's Adventures With the Milkarpies," and other children's stories originated to stimulate child interest in the drinking of mlk.

Health Records, to be used by the child and to encourage the performing of health and food habits.

Height and weight charts which can be referred to by the mother to find out what percentage underweight the child happens to be.

"An Interesting Experiment With Malnourished Children," and "Public School Number 38, New York City, Experiment With Under-nourished Children," scientific data on methods of overcoming malnutrition.

Teachers, nurses and health workers writing in to the Borden Company for material on nutrition receive this material and in addition "Twenty Suggestive Lessons for Nutrition Classes," a booklet compiled for the use of our nutrition workers and available to school teachers, health workers and nurses in need of such material. Through the courtesy of thirty well known commercial companies, educational material bearing directly on the health subjects mentioned in this booklet, will be sent to teachers who request such material, from the respective companies.

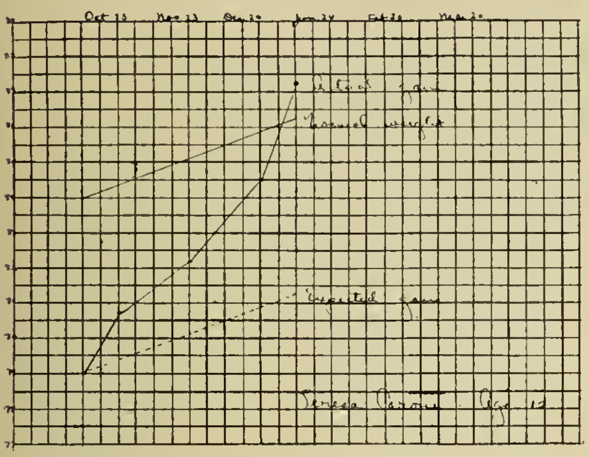
We believe that the child's interest in his well being is by far the most important factor in constructive health work. To stimulate this the MILKARPIE (milk carpenter), a small imaginative creature which lives in milk, was originated. There are hundreds of these milkarpies in a cup of milk and they help children grow healthy and happy by building up their bodies with the bricks of protein, fat, carbohydrate and ash constituents found in this health food. Several stories have been written about them and their adventures have also been broadcasted by radio.

To further the interest in health a club called the "Milkarpie Health Klub" has been organized. A child wishing to belong to this club makes out an application card pledging his honor to live up to its rules. This application card containing health information which is useful in understanding the child's individual needs is kept on reference in our files. Each child receives a membership card immediately after enrollment and a health record with which he can start checking off his daily health habits. On the twenty-fifth of each month this health record is sent in to the club counsellor with a letter telling just what efforts the member has made toward gaining in weight, strength and happiness. These records are checked by our office force and filed. The letters are answered personally if the writer requires special attention, and milkarpie stories and material are sent out to the members on the first of each month. These monthly letters and stories encourage good hygiene and food habits such as exercise, cleanliness, long hours of sleep, fresh air, brushing of teeth, the eating of cereals, fresh fruits and vegetables. The members of the club are under the observation of trained nutrition workers for four months. At the end of this time they become honorary members of the club and are reminded occasionally during the year that "Health Means Preparedness" and to live up to their club rules.

By means of our health club we are able to get in touch with many children who do not come in contact with health organizations. Letters of appreciation from the mothers of our children tell us the value of the Milkarpie Health Klub.

This is the story of the Nutrition Department of the Borden Company and we trust that you who are working for the same aim—to promote better health for the six million malnourished children of the United States—will not look askance at us and say "Oh, yes, Advertising!" but will let us cooperate with you and help you put over the child health campaign.

A Case History in the Borden Nutrition Class



TERESA CARONE, an Italian girl of twelve, is an excellent example of the value of midmorning feedings of condensed milk. She entered the nutrition class with the drawn, sad face of a girl who is old before her time. She is the eldest of six children with a mother who neither speaks nor understands English. The children by their shiftless attitude toward school work reveal the lack of all intelligent home influence. Their home is in a tumble-down shack and is very dirty.

In three months time—from October 23 to January 24, a period including the disrupting holiday season, Teresa went from seventy-nine pounds to eighty-seven and a quarter — a pound over her normal weight. Her progress was steady and subsequent weighings showed that the gain was lasting. Her face rounded out and lost its strained expression. Being interested in the class, she made efforts to carry the health teachings into her home and to overcome the conditions there. Her food habits improved—she began to eat the necessary cereals and to drink milk at home—and her appearance bore daily witness to the improved habits of hygiene. She became a normal child. Her happy expression proved this, as well as her height and weight chart.

The Poetry of Home Work

By FRANCES S. KLAWITER

IT was the desire to get away from the drudgery of housekeeping that led me to look for the poetry of home work. I felt that the mothers could teach the girls to cook potatoes and to wash a window if need be, but it was the work of the home economics teacher to show her how to do these things and enjoy them.

My first experience was in working out the much dreaded oatmeal gruel lessons in connection with the story of "Oliver Twist." The girls all played that they were orphans and that I was the Beadle. After seeing to the preparations of the dish in a very domineering way, one little girl, who

ROYAL
Absolutely Pure
Baking Powder

is made from Cream of Tartar, derived from grapes—rich, ripe, healthful grapes, grown in the famous vineyards of southern Europe.

That is why ROYAL BAKING POWDER is so wholesome and healthful—why so many doctors, nurses and dietitians prefer it and recommend it—why so many women, the world over, insist upon it.

Make your next cake wholesome, healthful, delicious, by using ROYAL BAKING POWDER.

Contains No Alum—
Leaves No Bitter Taste

had lately seen Jackie Coogan in the moving picture of this book, suggested that we eat the gruel out of our yellow bowls and that one girl be Oliver and ask for more. At the end of the lesson I smiled to think how eagerly the girls had worked out and enjoyed this simple cooking lesson, with the aid of a little play, or poetry, or vitalizing, or whatever you may care to call it.

This appreciation work can be carried out in hundreds of ways. Few people think of Paul Lawrence Dunbar and his colored people, when making cornbread, but I have seen many a girl enthusiastic over a corn bread lesson after I had recited his

"When Manny says de blessin',
And de corn pon's hot."

And pies! It simply takes James Whitcomb Riley's

"Nine little goblins with green glass eyes,
Nine little goblins who had no sense,
And couldn't tell coppers from cold mince pies,"

at the end of a talk on proper foods for growing boys and girls, to make them decide they could not eat pies.

At the same time another class was studying corn dishes and, when I found that they were working with the American Indian in history, I suggested that the two were connected and asked the girls what they could find out about this. The next day Evelyn brought me an advertisement of the Quaker Oats people in which the Indian legend of the corn is told. I read it to the girls and soon we were working on a pantomime playlet based on this advertisement. It is a story of how Manitou, the Great Spirit, called the three good Spirits of Beautiful Youth (the Spirits of Strength, Courage, and Truth) to give to the Earth the flowers, grass, trees, and grain and how he was so pleased with their work that he gave them the corn, the king of all grains, to be their own, "that he who ate thereof should be blessed with the Spirit of Strength, the Spirit of Courage, and the Spirit of Truth." It is a beautiful legend and was easily worked out. An old Indian brave told the story around the camp fire while it was acted out by the girls, with soft Indian music to lend atmosphere.

These are merely suggestions and you will find others all around you, but the main thing is having the girls bring them in and work them out themselves.

This appreciation work is not only for this subject, but it is especially vital in Home Economics. If people spent as much time finding out the bright and interesting side of home life and home work, as they do trying to find the opposite side, our younger generation would not be a generation of boy and girl cynics, as I find so many are, but a generation eager to work out the best in the best way, which way leads most of us into happy homes.

Play as an Organizer

By JESSIE M. LOWE

Instructor, Forest Park Junior High School, Springfield

THE old adage which says that necessity is the mother of invention proves true again and again.

At the beginning of a semester I found myself confronted with a new problem in two of my foods classes. These classes were both entering junior high school, but were very young, very child-like. They were still playing dolls and house, and the kindred plays of that age.

Their first three lessons seemed almost failures. They did not understand my ways, and gained little, I am certain, during that time.

At the end of the third lesson, I began to realize the extreme need of changed action on my part. I began to think more about the children and less about my subject. The outcome of my study and the realization of the realness of play to these children solved the problem.

With only a little suggestion from me the two cities—one of Order and one of Tidiness—were formed. Each city had a mayor, a council, traffic laws, and all formation necessary for good government. The laboratory was the city, the sections of desks were the streets, and traffic laws controlled all passing.

Each citizen tried to do well, and standards were demanded that I should hardly have dared to hope for. Good habits of procedure came naturally, and the class advanced steadily.

With this irksome part of the lesson taken care of, the time for the foods lesson was increased and the lesson itself better appreciated.

The cities of Order and of Tidiness have proved healthful and helpful organizations through two semesters, and will exist forever, I am sure, in the memories of their citizens.

Reaching into the Home

By MRS. MARGARET ELLS

Director, and

HELEN I. TOLUM

Instructor, Girls' Division, Continuation School, Springfield

THE ever present criticism of food work in schools is that it does not carry over into the home. Parents and citizens generally, who know nothing of the work done in schools, are always ready to attack us on this score. No doubt this has been a just criticism and continues to be so if our work does not function in the home.

Continuation school teachers, because of their follow-up visits to the homes, are able to see the needs and know that practical cookery is necessary. For example, a girl who is a member of a family of sixteen will not be able to make muffins for the family meal if she has made one muffin in school. She needs to know family recipes, and how to group them to make a nourishing meal.

Our girls come from various types of homes. First we have the home permit cases. These are of two classes: the girl who is the homemaker in her own home, because her mother works in a factory, is ill, or has died leaving her to care for the younger children. Then there is the girl who is working in another's home, perhaps, as mother's helper.

In the first case we will cite a typical example. Fabiola's mother died during the summer vacation. Fabiola had been working in a factory, but now it was necessary for her to stay at home and care for the family. Every week when she came to continuation school, she was anxious to take home her cook book. She was a very quiet girl and rather sullen at first, as life's burden had pressed on her pretty hard. In a few weeks she began to take an active part in class work in preparing meals, and would tell the teacher about the recipe she had tried at home. About Christmas time Fabiola asked for a recipe for pork cake which her mother had always made at this time of year, and expressed a fear that she might not be able to make it. She was told to have the necessary ingredients ready for a certain day, and a visit would be made at her home. When the teacher arrived, Fabiola's greeting was, "My father would like to have you help me make some doughnuts." I thought that the making of the pork cake had been laid aside but no, indeed; as soon as the pork cake was in the oven, the ingredients for doughnuts were brought out, and we proceeded to make and fry doughnuts. This proved to be quite a day in Fabiola's home. During the process of cooking, an uncle sat in the kitchen very near the stove supervising the work, ever and anon puffing away at a very strong pipe.

A Special Offer to Teachers of Home Economics

¶ We have a few copies of recent issues of FOOD AND HEALTH EDUCATION containing many suggestions on class room work in food and health instruction which we will send FREE to any teacher who sends a subscription for one year beginning with the September issue.

¶ The subscription price is One Dollar a Year. Send One Dollar at once and we will not only send you the paper for a year, but will send three extra copies — fifteen months in all.

¶ To take advantage of this offer your subscription must be received at once as the supply of extra copies is limited.

Address:

Food and Health Education

37 WEST 39th STREET
NEW YORK

The Dietary Importance of
Knox Gelatine

IT has been definitely proved that KNOX SPARKLING GELATINE is of the greatest importance in the feeding of invalids or convalescents. Its colloidal action in the promotion of digestion by emulsifying or breaking up the larger food particles so they may more readily respond to the gastric action, is more and more being recognized by eminent authorities.

Here is a recipe that not alone has great appetite attraction, but is unusually wholesome and beneficial. It is made with

KNOX
SPARKLING
GELATINE

BAVARIAN CREAM

1 teaspoonful Knox Sparkling Gelatine
1 tablespoonful cold water
¼ cup milk
A few grains of salt
1 egg yolk
½ tablespoonful sugar
Vanilla
¼ cup whipped cream

Soften the gelatine in the cold water; heat the milk and pour on the egg yolk well beaten with the sugar. Add softened gelatine, and when mixture begins to thicken, fold in the whipped cream and flavoring. Turn into a mold first dipped in cold water and chill. Serve with lady fingers.

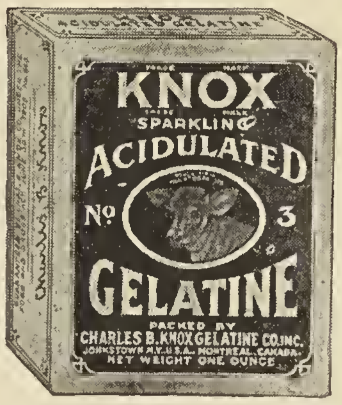
This recipe is for an individual serving. For more, increase quantities proportionately.

Other Recipes Sent Free

Mrs. Knox's Books, "Dainty Desserts" and "Food Economy," containing hundreds of recipes for all kinds of delightful dishes, will be sent free on receipt of 4c to cover postage.

The Charles B. Knox Gelatine Co.
111 Knox Ave., Johnstown, New York

Plain for general use. The original unflavored, unsweetened package.



The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Another follow-up visit was made about a month later at Fabiola's home, and it was found that she had successfully made pork cake and doughnuts for the New Year's celebration, and had also taught her older sister to do likewise.

Ruth takes charge of the work at home, because her mother works in a factory. The home visit was made following Ruth's morning at school, and the teacher and Ruth arrived at the home at the same time. The father, mother and Ruth had left very early in the morning, and the four younger children were in school. They, however, had been home for their lunch. Imagine the condition of that home, and when you also consider that it was mid-winter, it was indeed a sorry, cheerless place. The teacher felt helpless at first, as to what she could do, but when she saw that cheery little housekeeper bring that disordered home into order and cheerfulness, she felt that the instruction given Ruth in school was not in vain. As soon as the house was in order, the teacher helped her to make a nourishing soup for supper, and then Ruth asked if she couldn't make a cake, so as to have something to put in her mother's lunch box for a surprise. Ruth is also one of the girls who asks to take her cook book home.

The girls who go into other homes as mothers' helpers usually begin by caring for the small children in the family, but gradually take on other tasks. Some of the continuation school girls because of their knowledge of foods are first asked to prepare breakfast. Perhaps a little later the employer wishes to attend a bridge party, and Nellie is naturally expected to prepare luncheon. If she does it pretty well, Mrs. Smith is pleased, and a little praise goes a long way with Nellie. The following week Nellie wants suggestions when she comes to school, and takes a little more interest in the meal that is being served that day. Her cook book goes home and comes back looking a little more worn each time.

Next we have girls who work in factories, and whose mothers also work outside of the home. In some cases there are younger children who come home for luncheon and in many cases a noon meal must be prepared. We find that some girls who come to our school are anxious to help their mothers and when they know how to take over the important task of getting a meal, they are delighted and plan always to get home before their mothers. The mothers tell us this when we visit the home.

Girls from foreign homes where there is only foreign cookery are another group. They want American cookery. Most of their mothers are interested and are willing to have the girls learn, and to cook at home. One mother laughingly said, "The kids like Amelia's cooking best." She was so pleased to tell about Italian cookery, and served me an Italian dish which was delicious.

Another home where very little English is understood was visited. When they knew that I was interested in Antoinette, I saw a small child hurry from the room and return hugging a package of rolled oats. Antoinette had helped to prepare a breakfast at school, and the cereal served was rolled oats; the mother beamed and said, "We like."

We get many girls from homes where the mothers do not know how to cook the simplest things. Naturally, the girls have no opportunity to learn to cook things in their own homes, but these girls are all the more ready to learn to cook, and to serve meals. They not only learn themselves, but teach their mothers. Bertha's home was one of the most hopeless because of the lack of knowledge on the part of her mother. Now, Bertha not only knows how to make bread, but her mother knows also.

Food work with our continuation school girls is not only carried over into the home, but goes into the places of employment. One employment manager after talking with girls in the food classes, asked for suggestions for the lunch in her factory. Another manager confessed that she copied the girls' recipes and wanted one of our cook books which is a collection of simple recipes held together by two card board covers. Another forelady was having a party and wanted to serve fruit salad. She had heard Jennie tell about making fruit salad at school, and so asked for her directions.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology.** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition articles on hygiene suitable for supplementary reading, etc.

3. **"Vitamins in Canned Foods.".** A carefully prepared bulletin discussing the problems of processing as they affect the stability of the vitamines A, B and C.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5 **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better with Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."**. A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for left-overs and plain desserts. A valuable pamphlet on the use of gelatine.

29. **"Bread and ——."** An illustrated booklet, describing the manufacture of oleomargarine, together with recipes and directions for preparing attractive dishes in which the product may be used.

30. **"One Dish Hot Meals For Rural Schools."** Carefully tested recipes prepared by the domestic science director of a large packing company.

31. **"A Six Weeks' Sequence In School Lunches, Suitable for Schools of 100 to 300 Pupils."** Well organized material on the development of a series of school lunches. Menus and recipes.

32. **"Educational Meat Charts."** Colored charts of convenient size, with a side of beef, lamb, etc., pictured entire, with the different cuts shown graphically, both singly and in relation to the animal.

33. **"Coffee From Tree to Cup."** A series of illustrated cards forming an educational exhibit. Price 50 cents.

34. **"Medal Cook Book."** A carefully prepared cook book, giving directions for all the standard cookery processes with special attention to those dishes requiring flour mixtures.

35. **"Height and Weight Tables For Boys and Girls."** Arranged from Dr. Woods' tables. Cards giving normal weights for both boys and girls. Published by Food and Health Education of The American Food Journal.

36. **"The Dietetic Advantage of a Digestible Cooking Fat."** A 2,000-word lesson paper prepared by an expert for a large food products company, with comparisons of various fats as to melting point, digestibility and food value. Good supplementary reading for the class room.

37. **"Meat Price Chart."** A standard-size wall chart, printed in colors. Shows graphically the various cuts of meat both in relation to the animal and separately. Brings out relation of supply to demand in fixing values. Graphic representation of dishes prepared from the different cuts.

38. **"About Canned Corn," "About Custard Pumpkin," "About Canned Peas."** Three booklets containing tested recipes and interesting facts on commercial canning processes. The recipes are so arranged as to fit conveniently into a standard-size recipe file. The information concerning canning processes is of value for class room instruction in food economics.

39. **"The Children's Party Book."** A twenty-five-page pamphlet, illustrated in color. Gives outlines of games for 10 holidays: Christmas, St. Patrick's Day, New Year's, etc., with suggestions for refreshments, recipes for fancy cakes, etc. Issued by the educational department of a large baking powder company.

40. **"Nationally Known Recipes,"** a fifty-page booklet showing how powdered milk may be used in soups, fish, sauces, salad dressings, breads, and candies. More than 30 organizations, manufacturers, educators and magazine editors cooperated in the making of the booklet.

41. **"To the Teacher."** Booklet showing how to visualize to classes facts about powdered milk. An educational wall chart showing process of manufacture of powdered milk will also be sent free to teachers.

42. **"Surprise Recipes."** A collection of recipes featuring powdered lemon juice (not lemon extract), printed in convenient form for use in a recipe-filing cabinet.

43. **"To the Teachers of Home Economics and Dietetics."** A booklet showing the place of powdered milk in bread making.

Heavy Foods During Hot Days

are not only dietetically wrong—but involve needless and useless preparation and fuel expenditure.

MILK

SPELL IT BACKWARDS

is an ideal source of food elements and vitamins during the summer months. Delicious and varied milk beverages will add materially to your physical comfort.

KLIM

SPELL IT BACKWARDS

is the ideal milk supply. No waste from souring—easily reliquified to the basis of normal 3½% butterfat pasteurized milk—contains the food value and vitamins of liquid pasteurized milk. Is delicious in the following food drinks:

Ginger Milk

¾ glass ginger ale (unsweetened)
4 tablespoons Klim Powdered Whole Milk

Method: Place the Klim Powdered Milk *on top* of the ginger ale and beat, (do not stir) until dissolved. Ice and serve.

Raspberry Rapture

1 glass reliquified Klim.
¼ teaspoon Raspberry Extract

Method: Add extract to Klim, ice and serve

Iced Klimnogg

1 egg 1 tablespoon sugar 1 teaspoon ginger ¾ glass reliquified Klim Salt and nutmeg

Method: Beat egg yolk until thick. Add sugar, ginger and salt. Add Klim slowly. When blended, sprinkle with nutmeg, ice and serve.

One pound of Klim Powdered Whole Milk will make one gallon of reliquified Milk.
One pound of Klim Powdered Skimmed Milk will make five quarts—reliquified.

Write for our Cook Book, "Nationally Known Recipes."

THE DIRECTOR, Department of Dietetics and Cookery, **MERRELL-SOULE COMPANY, SYRACUSE, N. Y.**

Valuable information on government standards.

44. **"Lamb—Eat It Often."** A recipe booklet issued by a large packing house with many suggestions for preparation and serving of lamb.

45. **"Wheat and Flour Primer."** An illustrated pamphlet on wheat and flour manufacture issued by a large milling company. Suitable for supplementary reading in schools.

46. **"Cold Storage."** A leaflet issued by well known meat packers showing uses and economics of refrigeration.

47. **"Gems from Mammy's Southern Kitchen."** A pamphlet with 100 tested recipes, menus and food tables, featuring rolled oats.

48. **"The Story of the Bath."** A thirty-page pamphlet published at the suggestion of school superintendents, by a large soap manufacturing company. Of interest to teachers of food and health showing the relation of personal cleanliness to proper nutrition and bodily integrity.

Editor's note: Booklet Number 20, as listed in Food and Health Education for April, 1923, under the title "Bee Brand Manual of Cookery" is distributed at a cost of 50 cents per copy. We have been asked, however, to announce that the company publishing the book will be happy to make a special price for domestic science teachers of 25 cents per copy. The recipes include specialties of Southern cooks and have all been tested by a graduate of Columbia University.

49 **"Cream of Tartar Baking Powder."** Large wall chart, showing graphically the composition of this class of baking powder.

50. **"A Cook Book in Yiddish,"** featuring baking powder.

51. **"Ways to Save Eggs."** A cook book featuring baking powder.

52. **"Temperature Guide."** Accurate tabulation of proper temperatures for different cookery processes.

53. **"The School Lunch Box."** Illustrated leaflet giving attractive recipes.

54. **"Baking Powders, Classification and Ingredients."** Leaflet giving much scientific information on the composition of baking powders.

55. **"New Cook Book."** A new edition of a practical recipe book put out by a baking powder company.

56. **"Johnnie's Adventures With the Milkarpies."** Charmingly written booklet featuring value of milk.

57. **"An Interesting Experiment With Malnourished Children."** Reprint, showing good results of nutrition work on part of large condensed milk company.

58. **"Keeping Your Child Fit."** Menus for Little People, and the Adolescent Girl. Three pamphlets published by condensed milk company. Very attractively printed.

59. **"To Members of the Milkarpie Klub."** Folder, giving information about a health club for boys and girls. Published by a large condensed milk company.

60. **"The Famous Eagle" and "The First Milkarpies."** Two leaflets with educational fairy stories. Published by a condensed milk company.

61. **"Bread and Its Ingredients."** Pamphlet giving carefully prepared information on wheat, flour, milling, yeast and the finished bread. Illustrated. Valuable for supplementary class room reading. Published by a well-known yeast manufacturer.

62. **"All About Milk."** Pamphlet by Milton J. Rosenau, M.D., Professor of Preventive Medicine and Hygiene, Harvard University. Information about the production, distribution and consumption of milk. Published by a large life insurance company.

63. **"Metropolitan Cook Book."** Sixty-page booklet containing helpful recipes and suggestions for selecting proper food. Published by a life insurance company.

64. **"Metropolitan Mother Goose."** Attractive adaptation of Mother Goose melodies to modern health teaching. Also published on illuminated post cards.

65. **"How to Live Long,"** by Irving Fisher. Illustrated pamphlet, published by life insurance company. Gives fifteen rules for good health.

66. **"Clean Teeth Songs."** Illustrated sheet music, containing health songs for children. Published by manufacturer of toilet accessories.

67. **"Instructions for the Home Care of the Mouth."** Leaflet published by manufacturer. Helpfully illustrated.

68. **Two attractive "cut-outs,"** graphically illustrating the proper method of brushing the teeth.

69. **"Looking Inside a Health Tooth."** Folded model of tooth, showing structure and first steps in decay. Published by manufacturer of dentifrice.

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FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Adviser, Dr. W. W. Skinner, Bureau of Chemistry, U. S. Dept. of Agriculture.

The Growth of the Food Flavors Industry

By MELVIN DE GROOTE

Industrial Fellow, Mellon Institute of Industrial Rerearch, University of Pittsburgh

THE history of food flavors is the history of antiquity itself. The earliest Biblical writings make frequent reference to perfumes and fine spices. History indicates that these products were used in medicine or perfume compounding and also to give distinctive flavor to food products, more especially sweetmeats. Some of the candies of the Orient are still flavored with attar of rose, in a manner employed for many centuries. Even in America today there is a small demand for rose extract and it is sold to a limited extent of domestic trade and the better class of confectioners and caterers.

The history of vanilla may be taken as an example of a flavor which is truly American in origin. The history of the bean itself dates back to its discovery, approximately five centuries ago. During their conquest of Mexico, the Spaniards found the vanilla bean and chocolate in every-day use by the Aztec Indians. It is rather remarkable that the combination employed by the aborigines—a mixture of ground vanilla and chocolate—is still a prime favorite at the present time. History relates that the vanilla bean was imported into England in the year 1510 or thereabouts. Botanical mention was made of it first in 1610 by Clausius, who obtained specimens from Hugh Morgan, apothecary to Queen Elizabeth.

The food flavors industry is not large in size. However, it is enjoying probably as fast a growth as any other branch of manufacture. The Department of Commerce has estimated that $14,900,000 was spent on food flavors in 1914. In 1919, the amount was $18,300,000, and in 1921 it had reached $39,500,000. The sum of approximately $40,000,000, spent annually as such, is not large, but it must be borne in mind that the flavor-extract industry is really a key industry. Food flavors go to a large variety of consumers: the household, the ice-cream maker, the baker, the confectionery maker, the carbonated beverage maker, the soda fountain, the brewer. If the candy maker could not add flavors to his products and produce a wide variety of tastes, his business would die out over night. The same is true of the carbonated beverage maker. His basic materials are sugar, water, acidulents and carbonic acid gas. By means of ten different flavors, he is able to produce ten different distinctive beverages. It has been estimated by specialists in the flavoring extract industry that it will approach the one hundred million dollar size in 1930.

The peculiar thing about food flavors is that they appeal to our senses of smell, taste, and sight, and yet we have no quantitative methods for measuring these sense reactions. The physiology and psychology of smell and taste are very complex. However, they are so important to every manufacturer of food products and indeed to every one interested in the food industry that it seems pertinent to discuss these aspects of the subject in a general way.

Mechanism of Taste and Odor Phenomena

The first question that arises here is the method by which taste is transmitted by a substance to the senses. It is known that light and heat energy are transmitted in the form of certain wave manifestations—a sort of vibration. A searchlight throws its beam for many miles and the rays are manifested as light when they reach the eye. The noise of a cannon may travel a long distance in the form of a sound wave; and, when it reaches the ear of a listener, it will be interpreted as the phenomenon that is ordinarily known as sound. The reader may wonder whether or not smell and taste are wave vibrations of a similar form. The answer is in the negative. From all data available, it seems that a substance must come into actual contact with the nerve terminals in order to give taste or odor sensation. The searchlight may make an impression on the sense of sight, even though it is a long distance away. The cannon roar likewise may affect the sense of hearing, even though the mechanism that started the wave disturbance is a great distance away. It seems absurd today to recall the fact that at one time the character of odoriferous stimulation was supposed to be dependent on external vibration instead of chemical action. This idea temporarily held ground because some substances like musk would create rather strong odors for quite a period of time without showing any noticeable loss when weighed on a balance. This same thing was true of camphor. However, Bertholet placed camphor over mercury in a vacuum tube, and there was a lowering of the column. This proved that there was a physical emanation comparable in general character to a gas.

The physiology of both taste and smell is rather vague and indefinite. Zwaardemaker and others have made considerable progress in recent years in odor physiology. The olfactory sense is not located in the main part of the nasal passage. It is actually located in the olfactory epithelium or membrane covering a rather small part of the septum at a considerable height above such nostril. The total area susceptible to odor sense is probably less than a square centimeter—perhaps about the area of the bottom of a collar button. The breath does not pass over this area. The nasal passages proper do not contain odor nerves, but they do have nerves whose irritation induces sneezing. It takes a sniffing effect to throw the odoriferous air against the true odor membranes, producing by actual mechanical contact a result which causes odor. The greatest handicap that must be met in experimental work of this sort is the fact that there is no scientific instrument available for measuring either taste or smell.

The amount of substance detectable in air shows considerable variation, not only with the substance itself, but also with the person. In the case of ethyl ether, 0.005 milligram per liter is detectable. With camphor, the same figure holds true, whereas in the case of oil of bitter orange peel one-hundredth of that amount is perceptible. For hydrogen sulfide, the amount present need only be one-fiftieth as much as in the case of the orange oil. However, in the case of genuinely odoriferous substances like mercaptan 0.00000004 milligram per liter of air is detectable.

Various Divisions of Taste Group

Taste proper has been divided by tradition into four classes: namely, bitter, sweet, sour, and salty. It was formerly held that these classes constituted all the modifications of taste that existed. One class was supposed to neutralize the other. When examined chemically, it is seen that, from the general composition of many of the simpler substances, one can predict beforehand into which one of the above classes a material will fall. In the sour group, there are the following acids: sulfuric, nitric, hydrochloric, phosphoric, acetic, citric, tartaric, lactic, malic, etc. All these substances have a common characteristic. When they are dissolved in water, they give an acid hydrogen ion, and this is the source of the sour taste. Therefore, one may establish the following principle of taste chemistry: if one can deduce from the chemical composition of a substance that it will give a hydrogen ior in solution, then it will have a sour taste. This applies to the acids and acid salts. Then there are a variety of neutral salts, such as sodium chloride, ammonium chloride, lithium chloride, sodium fluoride, sodium sulfate, etc., that have a pronounced salty taste. Thus, as a second principle, the assumption may be made that the simpler neutral inorganic compounds will in most instances give a salty taste. Then, too, it is well known that, if a carbohydrate corresponds in general formula to a class, indicated as being a mono-saccharose or a di-saccharose, it will likely have a sweet taste. It is also known that a number of materials of vegetable source are classified as being alkaloids and that they are basic nitrogenous substances. As a class, they represent the bitter substances, such as quinin, cinchonin, strychnin, caffein, etc. It has been remarked previously that at one time these were supposed to constitute the only general classes of taste. However, any chemist can readily suggest another class, which includes substances giving alkaline taste such as baking soda, lime water, milk of magnesia, washing soda, etc. These substances have the common characteristic of giving a hydroxyl ion in solution. Alkalies and alkaline salts fall in this class.

Some of these classes excite the taste nerves much more readily than others. A person can recognize sulfuric acid in solutions ranging in the neighborhood of 1 part in 1,000 or 2,000 parts of water. Sugar takes about 10 times as much, or about one part in 100 or 200 of water. Common salt is peculiar insofar that the identification ranges from about 1 part in 200 to as little as 1 part in 2,000. The range of a bitter material, such as quinin sulfate, is rather narrow—1 part in 33,000 to 39,000 parts of water. The wide variation in salt detection indicates why some waters have a decided mineral taste to certain persons and not to others.

There is a certain time factor in the matter of taste. It takes somewhat less than a sixth of a second to arouse the sense of taste. At the base of the tongue, sweet, bitter or salty solution of detectable strength will be recognized in about one-half second. But when it comes to the tip of the tongue, people show considerable variation. Some persons can detect a bitter solution on the tongue-tip in one-fifth of a second, whereas others take almost a second.

In the five varieties of materials showing five characteristic tastes, there are two common characteristics. In the first place, the compounds for the most part are rather simple in chemical composition, or rather in chemical structure. Secondly, these substances are relatively odorless. Quinin sulfate, cane sugar, bicarbonate of soda, citric acid, and common salt are all odorless. Therefore, the flavor maker immediately realizes that the distinctive taste or distinctive aroma of an extract cannot be obtained from the five classes mentioned. It must come from a class of highly odorous substances of complex chemical structure, known as the aromatics.

The Aromatic Group

These aromatic substances are peculiar in one respect. The taste and odor in each case are practically unique. The substance gives a certain odor or taste and it is not exactly reproduced by any other material. Contrast this state of affairs with the primary materials. Any one of a number of acids will give a sour taste. Any one of a number of bases will give an alkaline taste. Any one of a number of salts will give a salty taste. Another peculiar thing about the aromatics is the fact that where they are found in the vegetable kingdom Nature rarely uses one alone, but employs several in combination. Furthermore, a trace of an aromatic chemical will usually arouse the taste senses, in comparison with much the larger amounts of salts, acids, or sugars required to produce detectable effects.

The aromatics are numerous, and for the purpose of this article it will be sufficient to name a few of the ones that are better known. The list includes vanillin, coumarin, citral, safrol, methyl salicylate, ethyl acetate, ethyl propionate, terpineal, anethol, anisic aldehyde, benzaldehyde, cinnamic aldehyde, amyl phenyl acetate, benzyl acetate, methyl irolol, geraniol, eugenol, heliotropine, methyl anthranillate, and citronellol. In addition, Nature has given us a large variety of essential oils that have certain definite odors. Quite often synthetic reproductions of the more important constituents are available. Sometimes the aromatic constituents cannot be satisfactorily separated from other inert materials. Quite often the oils are satisfactory for use per se without operation. Other odoriferous materials, such as balsams, tinctures, gums, oleoresins, flower concretes, etc., are also employed.

The reader may wonder how the chemist tries to explain this difference between substances giving primary tastes and aromatics that have distinctive tastes and odors. The matter is very intricate and involved. Perhaps an illustration will serve to give an idea. Chemists held for quite a while that the atomic state of matter, like mercury, or sulfur or iodine, represented the ultimate state of subdivision. It now seems that these atoms, like sulfur, oxygen, or nitrogen, instead of being plain solid particles, are in reality groups of much smaller particles held together much like the solar system, with voids or spaces in between. It also seems probable that part of the particles are in rapid motion around others as nuclei or pivots. Odor and taste seem to be related to the sum total effect produced by this internal commotion. The simpler substances, as salt, citric acid, and sodium bicarbonate, have rather simple internal movements, if any. Perhaps the intermolecular or inter-atomic speed never gets high enough to affect the sense of smell. Comparatively large amounts are required to affect the sense of taste. Our eyes do not "see" all the light rays that come to them. They miss the rays outside the infrared and the ultraviolet. So we may assume that, in the case of acids, bases, salts, or sugars, either this inside motion is too slow or too fast, so that odor organs cannot apprehend them. It is probably the result of slow motion. There are substances which are odorless to human beings and yet have a distinct odor to animals with sense organs of active lower range. We may also assume that the various alkalies give the same general motion effect, because the motion is probably related directly to the hydroxyl ion which, as has been previously remarked, is common to all alkalies. Likewise, the acids taste sour without exception, because the sour taste is due to the total effect induced by the internal motion of the hydrogen ion, which is common to all acids. Thus the aromatic chemicals are the complex high-speed bodies. They are very active internally and no two are alike. As a result, the internal motion effect in each case is different and the odor and taste are unique. To the chemist, this theory—and it is still a theory—offers many explanations of some well-known odor and taste manifestations. At the same time, there are numerous contradictions, and possible refutations.

Since the modern extract maker has this knowledge at his disposal, he is in a position to produce better extracts than was considered possible ten years ago. The tendency today is to produce an individual extract developed primarily for a specific industry or purpose. Of course, this does not apply to household extracts, because the housewife usually relies on a single kind of vanilla extract for all uses. Vanilla extract cannot be excelled as a flavor for cold puddings or similar edibles wherein it is not subjected to extreme cold or heat.

A great variety of extracts are used in the baking industry, but pure vanilla extract is almost unknown therein. The reason is that the heat of the oven affects the delicacy and flavoring strength of the bean extract to such an extent that its use is uneconomical. In the ice-cream industry true vanilla extract is used to some extent, but the majority of flavors used are dependent largely on vanillin for their flavoring value. The value of vanilla extract for any industry can only be judged by the satisfaction that it gives.

The ordinary alcoholic extract of lemon as used in the household could not be employed for any industrial purpose economically. In the first place, the oil of lemon used in a gallon of extract is worth about $0.25 and the alcohol about $4. Naturally the commercial user of flavoring materials cannot afford to pay this high price just for the vehicle. Even where alcoholic lemon extracts are employed, as in the bottling industry, the household extract is valueless because it will give neither a clear lemon beverage nor a cloudy one. The criterion of excellence of any flavor, regardless of type, is whether or not it serves the specific purpose for which it is intended on an economical basis.

Scientific Advances in the Industry

It must not be assumed that scientific advancement in the food-flavors industry has been limited to the psychology or physiology of the sense reaction or to the chemistry of the aromatic compounds themselves. Indeed, much of the excellence of present-day flavors is due to the improved technology of the industry. The grinding of vanilla beans, or their reduction by crushing, has been replaced by modern chopping machinery. Old-fashioned percolators for beans, roots, and other solids have been superseded by up-to-date equipment with accurate temperature control and positive circulation. Inefficient emulsifiers have given way to direct-drive machinery of powerful action and rapid control. Alcohol recovery from dregs is no longer limited to the use of stills. Hydraulic presses and centrifugals are employed. Super-centrifugals are being used to separate the oil layers from the alcoholic solutions. Clarification is also being handled by properly designed centrifugals. The flavors and extracts themselves are filled into bottles mechanically. Automatic machinery attaches labels in the larger plants. The mechanical technology has kept pace with the scientific developments of the industry.

During the last five years research attention in the flavors industry has been centered on the study of the use of ethyl alcohol in extracts and its possible replacement by other acceptable substances. Alcohol functions in various extracts and their manufacture in at least three distinct ways: as an extractive, as a solvent, and as a preservative. Alcohol mixed with the proper amount of water may be used to extract vanilla or tonka beans. The water and alcohol may be recovered, if desired, and the residue used as an oleoresin. Likewise oleoresin of vanilla or oleoresin of ginger may be dissolved in an alcohol solution of the proper strength, without previous alcoholic extraction. In this instance alcohol is simply acting as a solvent. The same is true in the solution of oils of lemon, orange or almond, or any other essential oil, in an alcoholic mixture. However, in both cases the alcohol is automatically acting as a preservative. In the extracts of some natural fruits, a very small amount of alcohol is required for solution. As a matter of fact, the percentage will usually run much higher, because the additional amount acts as a preservative. Finally it must be remembered that alcohol is harmless in the quantities employed in foods, a fact which is recognized by food officials.

Difficulties of Alcohol Employment

The advantages of ethyl alcohol seem to indicate that it is the ideal agent for the purpose. The question arises as to the reason for seeking a substitute. The answer is the cost, difficulty, and worry involved in its use. Alcohol itself is cheap. Grain alcohol can be made for sale at about fifty cents per gallon and even less. The federal government collects approximately $4.20 tax on each gallon of non-beverage alcohol intended for food purposes. So initia' cost of alcohol is about $4.80. Now, before the alcohol user can purchase it, he must submit an application for permit, together with a bond. The bond may increase the cost of alcohol from 25 to 50 cents per gallon. In addition to the bond, the bonding companies may require real estate or high grade collateral equal to one-third to one-half the penal sum of the bond. Then, as soon as alcohol is brought in the plant, the insurance rates increase. There is loss due to evaporation. As a rule, the extract maker considers that the overhead on each gallon of alcohol is about $1. Therefore, the material cost of alcohol will run about $5.80 per gallon. Each time that a barrel of alcohol is purchased a requisition must go to the proper prohibition enforcement official for authorization. Sometimes these requests go through in a few days and sometimes months and sometimes not at all. The theft of any alcohol may cost the loss of bond and forfeiture of penal sum. The manufacture of extracts by the small or medium sized extract maker is a business completely placed in jeopardy, due to circumstances surrounding the permissible use of non-beverage alcohol. Unfortunately, a certain undesirable class has been drawn to the field. It is this undesirable class which is causing the difficulties for the prohibition enforcement department and indirectly the legitimate extract maker. The irony of the situation is that although the industry has been favorably affected by prohibition, due to increased business, this has been offset by troubles in the way of supplies of alcoholic vehicles.

Substitutes for Ethyl Alcohol

Many of the substitutes suggested for ethyl alcohol have been found wanting either because their bromatological properties are doubtful, or else because their cost, even if manufactured on a commercial scale, will be prohibitive. Among the suggestions that are of practical value are the following: Invert sugar syrup, diacetin, methylene glycol, and glycerin. Invert sugar has little solvent power and is most useful as a constituent of emulsions. Glycerin is a solvent for vanillin and coumarin. It will also form at least a colloidal solution of vanilla and tonka oleoresins. It will not dissolve the essential oils, but it can partly replace alcohol in the solution of the terpeneless essential oils.

Methylene glycol is somewhat similar in solvent properties to glycerin, but it is more expensive and not so well known. It is claimed that diacetin has remarkable solvent properties, but thus far it is not widely used.

Instead of attempting to replace alcohol as such, attempts have been more successful in the manufacture of flavors for industrial purposes by the emulsion process. The essential oil is mixed with a colloid and dispersed by an aqueous phase. This type of flavor has largely replaced the alcoholic flavor prepared from essential oils. It is widely used by the confectioner, the baker and the ice-cream maker. Likewise these emulsions, in properly diluted forms, are used by the fountain and the bottler in the production of orange, lemon, limes, birch beer, root beer and sarsaparilla flavors. Even in the case of substitute vanilla flavors, the products manufactured from vanillin and coumarin without alcohol are finding excellent demand. Then. too, old-fashioned pure vanilla extract is meeting with replacement by concentrates, made by fortification of the bean extract with vanillin and coumarin. In this way, a pint of vanilla extract is taking the place of a gallon, due to the added vanillin. Many of the best grade of fruit-type fountain flavors are being made with glycerin as a preservative, and not alcohol.

It can be seen that the proper replacement of alcohol, or, more truly, the proper replacement of the alcoholic type of flavor, eliminates some undesirable legal aspects of the industry. The legal difficulties in the purchase and use of industrial non-beverage alcohol have been mentioned. Furthermore. rather complicated records must be kept of alcohol purchased and used. The entire situation tends to prevent reasonable profit in the industry if alcohol must be used. The legal aspects also involve the various federal and state laws. In any event, the product must meet the requirements of the food laws of the state in which the product is manufactured as well as of the state in which it is sold. If it happens to be the same state, then the federal laws do not affect it. However. in the case of two different states, the federal laws operate because the product must be shipped in interstate commerce. In any event the extract maker must satisfy himself that all laws are being recognized and that no violation or evasion occurs. The burden rests on the extract maker.

Opportunities in the Industry

In the technical phases of the industry there will be found many suggestions for further research. The relation between taste, smell and chemical composition still offers a myriad of unsolved problems. The present knowledge of the psychology and physiology of taste and smell senses is open for further amplification. The search is still on for a better and more suitable substitute for alcohol. Many of the factors affecting emulsion manufacture are unknown. The development of imitation fruit flavors, more closely simulating the true fruit than available flavors, would be valuable. This industry presents a vast field for the scientific investigator.

To speak of industrial possibilities in this important industry without some mathematical calculation is too vague to be of much value. It can be conservatively estimated that during the next few years the United States will spend more than $50,000,000 annually on flavors. There are approximately seventy cities in the United States having populations of one hundred thousand or more. Assuming that each of these is an individual center of population, then the money expended on food flavors in each vicinity will be in excess of a half-million dollars. It is at once evident that each of these communities is a legitimate field for the manufacture and sale of food flavors, and most especially for non-alcoholic food flavors, provided that they serve economically the specific industrial purposes for which they are intended.

In conclusion, it will be restated that the food-flavors industry of today is greatly changed from the situation ten years ago. The reasons for this change are the enormous increase in the size of the industry itself, the development of industrial flavors made for specific requirements, the better appreciation of quality on part of the consumer, and the better knowledge of flavoring aromatics due to researches in various related fields. Finally. there have been important improvements in the technology of the industry which have made better flavors possible. The most important change of all is the restriction and increased cost of ethyl alcohol, which has resulted in replacement of the alcoholic type of flavor by other more economic types. In a paper as brief as this one, it has only been possible to indicate the outstanding changes and touch upon the general progress of the industry. The research and industrial opportunities have been mentioned. It is hoped that some of the information presented in this article may prove of value to the food manufacturer and chemist, even though their particular field is not directly related to food flavors.

Making A Nutritionally Balanced Bread

By C. O. JOHNS, A. J. FINK and D. BREESE JONES

Protein Investigation Laboratory, Bureau of Chemistry, United States Department of Agriculture

A PUBLIC service patent, Number 1,356,988, dated October 26, 1920, was issued to C. O. Johns and A. J. Finks, of the Protein Investigation Laboratory, Bureau of Chemistry, United States Department of Agriculture, covering a formula for the preparation of a nutritionally balanced bread. In the patent, it is stated that "the object of our invention is to provide a palatable and nutritious bread made by adding to wheat flour or other cereal flours, soy bean, peanut, or other similar types of flour, which contain the same amino acids necessary to supplement the protein deficiencies of wheat and other cereal flours, inorganic or organic salts containing calcium, phosphorous, sodium and chlorine, in which wheat and other cereal flours ase also deficient, butter or other edible fats containing fat-soluble vitamin. These ingredients when properly mixed and baked in the ordinary manner known to housewives and bakers shall, together with water, constitute a complete food."

The formula given in the patent for this bread was based on results obtained by feeding experiments with albino rats. These experiments were started in February, 1920, and completed some time before the patent was issued. The data obtained, however, has not been heretofore published. In view of the prominence which recently has been given to the production of types of bread designed to contain all of the necessary ingredients of a complete diet, it has been deemed by the authors to be of sufficient interest and importance to publish at this time a description of the experiments upon which the claims stated in the patent were founded.

The great progress which has been made during recent years in the field of nutrition is marked by two outstanding discoveries—the discovery of those accessory food products usually referred to as vitamines, and knowledge gained by the cumulative results obtained by different investigators, that not all proteins have the same nutritive value. Formerly all foods were classified with respect to four basal factors: proteins, fats, carbohydrates and inorganic salts or "mineral matter." A diet was considered complete which contained these four factors quantitatively balanced with respect to the physiological needs of the individual. In the older appraisement of food values, no consideration was given to the quality of the protein. A protein was a protein, and its food value was largely judged by the number of calories it would furnish. Today we may know that a diet may supply an abundant amount of calories, and may contain a sufficient quantity of protein, fat, carbohydrates, inorganic constituents and vitamines, and yet be entirely inadequate to provide for the growth and maintenance of an animal in a condition of normal health, if the protein be not of the right quality.

Proteins differ from one another with respect to certain fundamental units of which the proteins are composed. These units are compounds called amino acids, of which some eighteen or nineteen are known as constituents of proteins. It has been shown by various investigators that certain of these amino acids are absolutely essential for the normal nutrition of animals, and unless they are present in the proteins of the diet, there can be no growth or repair to those tissue-proteins of the body which contain these amino acids as essential factors of their composition.

Extensive investigations on the milling products of wheat have shown that highly milled patent wheat flour is deficient with respect to several of the essential dietary factors. It is generally known that such a flour is deficient in water soluble vitamines, inorganic salts, and also in the quality of its protein mixture.

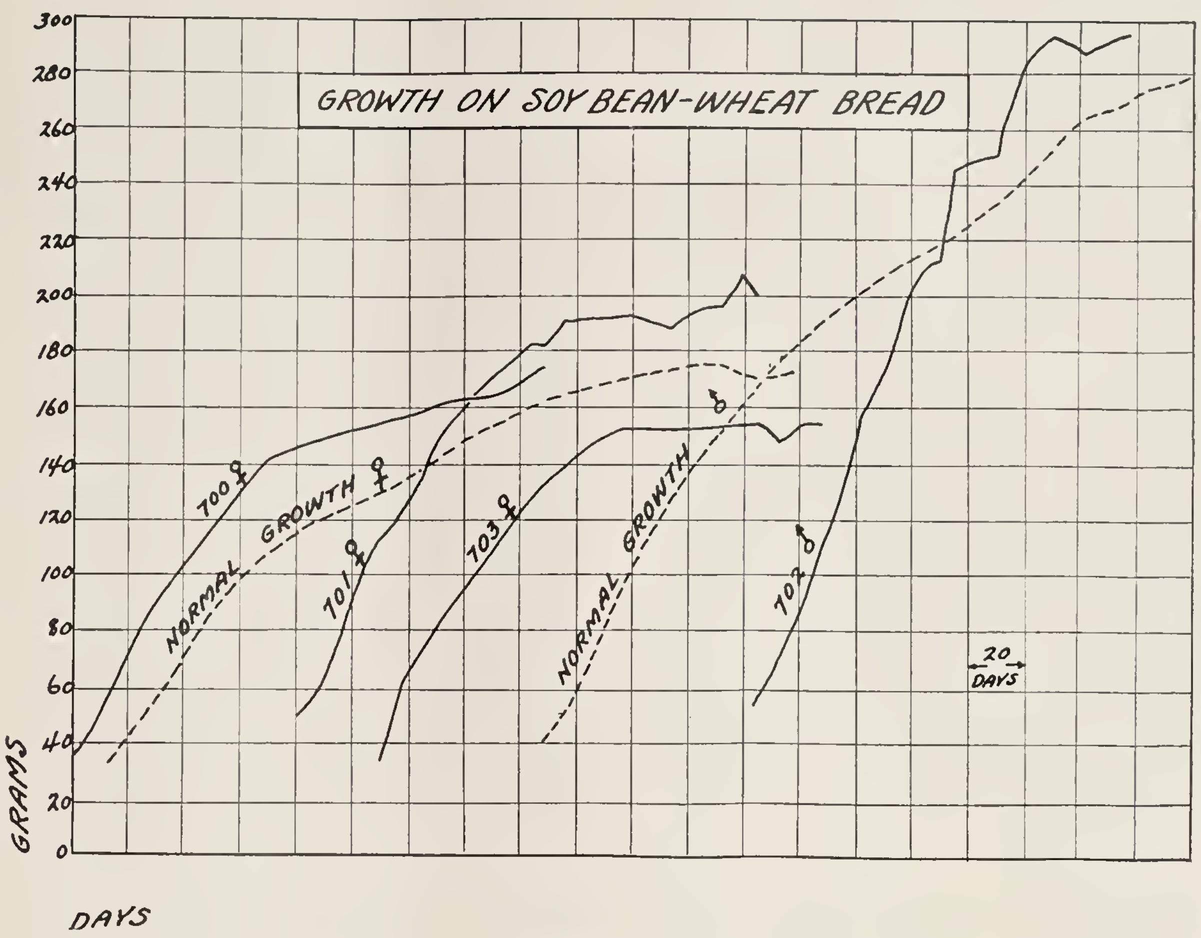

Chart II

It has been shown in previous publications from this laboratory by Johns and Finks, that both peanut flour and soy bean flour satisfactorily suppliment the deficiencies of "patent" wheat flour with respect to the protein and water soluble vitamin factors. A diet containing bread made from wheat flour (74 per cent extraction) to which was added an adequate inorganic salt mixture and butter fat, enabled albino rats to grow at only about one-third to two-thirds of the normal rate. A similar diet, however, in which the bread was made from a mixture of either twenty-five parts of peanut flour or soy bean flour and seventy-five parts of wheat flour furnished proteins and water soluble vitamin adequate for **normal growth.** Recently, Eddy and Eckman have also shown that the proteins of peanut flour have a high value in supplementing those of wheat flour, and from the results of their experiments state that "it seems permissible, then, to grant to the peanut flour a protein quality that ranks it with meat protein for growth."

The breads used in the feeding experiments described in this paper were made according to the formula (Table 1) given in the patent already referred to. When the ingredients are properly mixed and baked, palatable loaves of satisfactory texture and volume are obtained.

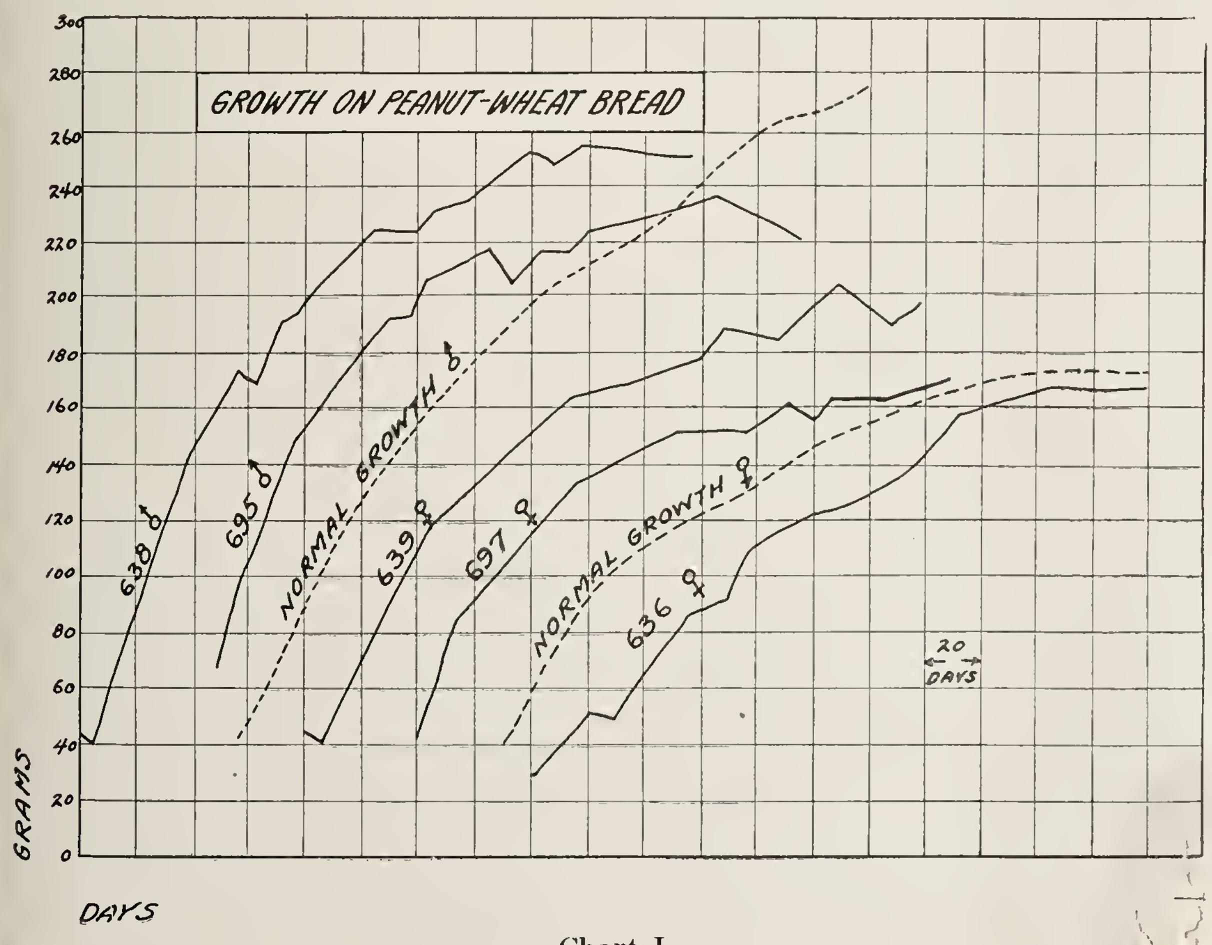

Chart I

In order to determine whether a bread made according to this formula, which contains practically all of the ditary factors known to be essential for the normal nutrition of animals, would be efficient in promoting the growth of young animals at the normal rate, the bread was dried and fed to young albino rats. This constituted their sole diet, aside from water, of which a fresh supply was constantly provided.

The rates at which the rats grew on this bread, as represented by the growth curves in Charts I and II, show that peanut and soy bean flours contain proteins which furnish those amino acids which are deficient in wheat flour and when used in the proportions given will enable young rats to grow at practically a normal rate without the addition of other amino acids or proteins. They show also that the inorganic constituents in this mixture of flours, together with the salts added, are adequate. The peanut and soy bean flours, together with the yeast added, supply the water soluble vitamine necessary for normal growth, and the requisite quantity of the fat soluble vitamine is furnished by the butter.

Growth Obtained on Peanut-Wheat Bread

Five rats, two males and three females, were fed a diet consisting solely of the peanutwheat bread and water. The formula for this bread is given in Table I. It was fed as rusks. The dried bread as fed had the approximate composition:

Ingredient	Per cent
Wheat flour	68.00
Peanut flour	23.00
Salt mixture $(NaC1CaHPO^4)$	2.70
Butter fat	4.50
Yeast	1.80
	100.00

The diet contained 16.68 per cent of protein, 7.48 per cent of which was furnished by the wheat flour and 9.20 per cent by the peanut flour.

Four of the rats were kept on this diet for 216 days and the other for 182 days. From the growth curves shown on Chart I, it will be seen by comparison with the curves of normal growth that this lot of rats grew at a practically normal rate. This is in marked contrast to the rate of growth obtained on a diet in which the proteins came from a bread made from wheat flour alone [1], when growth at a rate of only one-third to two-thirds of the normal was obtained.

Growth Obtained on Soy Bean-Wheat Bread

This bread was made according to the formula given in Table I and had the same approximate composition as that of the peanut-wheat bread, with the exception that it contained 18.06 per cent of protein instead of the 16.68 per cent furnished by the peanut-wheat flour. This was on account of the somewhat higher percentage of protein in the soy bean flour. The rats used were kept on this diet for 130 to 165 days. They all grew at a normal rate or even better.

The rate at which the rats grew, as shown in Charts I and II, shows that the dietary factors in the breads were adequate for growth. In order to compare the relative efficiency of peanut flour with soy bean flour in these experiments, the mere rate at which the animals grew cannot be taken as a reliable criterion. During growth, a young animal continually increases its food intake. The more it grows, the more it eats. Consequently, those growing at different rates eat unlike quantities of food. As shown in Table

The different animals on the same diet did not make the same gains in the same periods of time. If, however, the total quantity of protein consumed be divided by the gain in weight during the same period of time, an index number is obtained showing the ratio of the gain in weight to grams of protein ingested for comparing the relative efficiency of different proteins, by which differences in food intake and rate of growth are largely eliminated. In doing this, we have followed the procedure of Osborne, Mendel and Ferry.[1] Accurate records of the food consumed were made and the gain in weight per gram of protein ingested caculated. These data are on file in records of the experiment.

During the first five weeks the rats on the peanut-wheat bread gained an average of 1.48 grams for every gram of protein consumed, while a similar gain of 1.50 grams was made by the rats on the soy bean-wheat bread. During the longer period of the first twelve weeks, the gain in weight per gram of protein ingested was the same for both breads (1.04 grams). The gains of weight per gram of protein eaten during the 12-week period were somewhat lower than during the five-week period, because growth is more rapid during the first few weeks.

These index numbers are in marked contrast to those obtained by Johns and Finks [1] in experiments in which rats were fed on a diet whose proteins came from wheat bread alone. On this ration, made adequate with respect to other dietary factors than protein, the animals made an average gain of only 0.64 grams, per gram of protein eaten during a period of 4 weeks.

According to results already tabulated, it appears that the proteins of peanut flour and soy bean flour in these breads are about equally efficient for promoting growth.

TABLE I

Ingredients	Juantity Parts by weight
Wheat flour	300
Peanut, or soy bean flour	100
Table salt (NaC1)	6
Di-calcium hydrogen phosphate $(CaHPO_4)$	6
Butter	20
Compressed yeast	10
	cc.
Water	228

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A Method of Expressing Numberically the Growth-Promoting Value of Proteins. T. B. Osborne, L. B. Mendel, and E. L. Ferry. J. Biol. Chem., XXXVII, 223, (1919).

Two States Pass Filled Milk Bills

(Continued from page 369)

they did not believe the elimination of competition by legislation was a sound means. They have said too that the elimination of margarins would accomplish nothing because the elimination of that product would result in the increased use of oleomargarine. The companies which now manufacture margarines exclusively would at once go into the manufacture of oleomargarines. Then too it has been pointed out that higher prices for butter in Washington and Oregon would attract butter from other states and there would be consequent adjustment of prices.

In both states the retail grocers made use of the referendum and succeeded in getting the two laws suspended until November, 1924, when they will be voted on by the people of the two states.

This is the first time in the history of legislation affecting foodstuffs that a law prohibiting the sale of margarins containing vegetable oils has been passed. This is the first time too that a distinction has been drawn between margarine and oleomargarine. Oregon in 19920 voted on a so-called auti-oleomargarine bill and defeated it by a substantial margin.

Dairymen in other states have watched the progress of the campaign of the farmers in Washington and Oregon to rid themselves of margarin competition with real interest. In several states their attorneys have advised them that the two laws constituted class legislation and would not be sustained by the courts. This is identical with the opinion of the manufacturers of margarin but these men have advised fighting the battle in the court of public opinion rather than in courts of law which were more expensive and less satisfactory.

In Oregon little difficulty was encountered in getting signatures to the referendum petitions, because but 8,437 certified names were required and the use of paid circulators was permitted. In Washington some trouble was encountered because when 24,000 certified names had to be obtained, from 20 to 30 per cent of the names were lost because of failure of voters to give their addresses when they registered rather than where they lived at present, because no paid circulators could be used. The entire burden of responsibility rested upon the retail dealers to get the signatures and they did well. In Oregon nearly 13,000 certified names, and in Washington 45 000 names were filed, nearly twice as many as were needed.

During the next year and a half the people of the two states will continue to use margarin. And at the same time the dairymen and the manufacturers will carry on a public debate in the newspapers and by use of speakers and direct-by-mail literature acquaint the public with the facts. The dairymen have little hopes of defeating the law in 1924 but they are confident that eventually they will succeed in ridding themselves of the competition of butter substitutes.

Spanish Olive Oil Industry Forges Ahead

Since 1898 the Spanish olive oil industry has steadily increased until at the present time Spain is the largest individual producing country in the world, according to Vice-Consul Edward E. Silvers, Seville, in a report to the Department of Commerce. There is no doubt about the possibilities for the development of the Spanish olive oil industry if only sufficient attention would be given to the exacting demands of the export trade. The greatest handicap to the industry seems to be a lack of organization or a concerted national policy on the part of the exporters. Each producer is depending upon himself in reaching out for markets to dispose of his oils.

Ceylon Tea Improving

Prosperity came with 1922 to Ceylon's tea industry, the most important of the island's resources. A continuation of the policy of fine plucking and careful manufacture, begun the previous year, resulted in a yield of uniformly high quality, says Consul Marshall M Vance, Colombo, in a report just received by the Department of Commerce. During 1922, the immense total of 171,392,240 pounds of black and green tea were shipped out of the country, an increase of 9,000,000 pounds over 1921, but still decidedly under the 1913-1922 average. The United Kingdom was by far the largest buyer of Ceylon tea, purchasing nearly 70 per cent of the exports. This country replaced Australia as Ceylon's second best customer, the Australians turning more and more to the cheaper Java-grown tea.

Chinese Like Salt Herring

If anything tickles the palate of a Chinese it is a salt herring, and upon this desire of the Celestial has sprung up an industry. Not only are herring by the ton shipped into China, but large quantities of locally produced herring are preserved and shipped abroad for the use of Chinese living in foreign countries, says William J. McCafferty, vice-consul at Hongkong, in a report to the Department of Commerce. At the present time the imported fish from Puget Sound costs less than two cents gold per pound delivered in Hongkong, whereas a medium grade of local salt fish cannot be purchased by the natives for less than ten cents gold per pound. The herring are packed by the American and Canadian exporters as they are caught, by simply being dumped into large strong boxes on the docks covered with salt petre and nailed up securely. After the fish arrive in China, the entrails are removed and the fish dried.

Austria Reduces Output of Flour

Despite a large and hungry population, Austria's flour mills have lately been compelled to reduce their output to less than a third. The country depends almost entirely on foreign grains, and since her source of supply from the earth has been cut off imports have been coming from overseas, says R. W. Heingartner, Consul at Vienna, in a report to the Department of Commerce. The crisis is not due to a falling off in flour consumption but is caused by the disproportionately high prices of raw materials as compared with the market price of the finished products of the mills. Foreign flour is now competing with the home product, and unless there comes a change in the sitoation, the Austrian population will soon be compelled to eat only white bread instead of the black bread which they have always eaten by preference.

Pennsylvania Enforces Pure Food Law

DURING the month of July, 1923, prosecutions were instituted by Pennsylvania food officials against manufacturers and dealers who were using saccharin in their products instead of sugar, according to a recent report by Director James Foust of the Pennsylvania Bureau of Foods.

Many of these violations came from vendors and manufacturers of soft drinks, thirty-one of such cases being successfully prosecuted in July. Eighty of the cases dealt with the sale of milk and cream which lacked the required fats and solids. The canned milk sold by one dealer was found to contain a certain amount of fat - but not milk fat.

The continued use of sulphur dioxide and sulphites in food; the use of benzoate of soda without proper labeling; coal tar dyes in fruit syrups; excessive moisture in creamery butter; misbranded food products; and soft drinks bottled under unsanitary conditions were some of the other infringements cited by the bureau.

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Mustard, pickles and relish, etc.
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Fruit Cordial candies.
Ice Cream

BOOK REVIEWS

Fasting and Undernutrition. A Biological and Sociological Study of Inanition. By Sergius Morgulis, Professor of Biochemistry, University of Nebraska College of Medicine. E. P. Dutton and Company, New York. $5.00.

Professor Morgulis opens his discussion by the statement that metabolism during inanition is the starting point of all nutritional studies. He next passes on to the consideration of his two objectives, first, to collect and to classify what is known about inanition; second, to consider the facts in their proper biological setting.

That an organism experiences inanition when it subsists on material previously stored in its tissues is generally accepted by authorities on nutrition. This condition is discussed in its acute stage, then in relation to a partial and finally to a chronic stage.

Chemical, physiological and morphological phenomena of inanition are treated in detail, histoloical peculiarities appearing at the beginning of inanition, being described as associated with changes in the colloidal condition of the protoplasm, and not all degenerative in kind. That progressive atrophic changes coincident with inanition are due to the gradual withdrawal of metaplasmic inclusions which represent the nutritive reserves of the cells is another contention of the author.

The chapters on chronic and on partial, and intermittent inanition as well as on inanition as related to growth are suggestive and constructive for all who are concerned with the problems of so-called undernourishment.

The author's conclusion is that the experiences both of the biological laboratory and of the laboratory of life confirm his own views, namely that thte organism possesses truly remarkable recuperative ability and that these experiences should serve as guide and inspiration as well as a measure of the social responsibility.

The Encyclopedia of Food. The Stories of the Foods by Which We Live — How and Where They Grow and Are Marketed — Their Comparative Values and How Best to Use and Enjoy Them. Published by Artemas Ward, New York. $10.00.

A beautifully illustrated royal octavo volume of approximately six hundred pages. As the title implies, the subject is treated in the style of an encyclopedia, each foodstuff being described according to its composition, source, food value, history and use.

The information is condensed in a very practical fashion; some of the more important foods however are given a page or more of text.

Not the least of the valuable featurès of the book is the description of each of the rare foods. By means of this happy combination the reader is assured of finding an answer to practically any question he might wish to ask concerning foodstuffs.

Full page color plates and illustrations in black and white add to the attractiveness of the book.

Eating to Live Long. By William Henry Porter, M.D. Reilly and Lee Company, Chicago. $1.50.

Dr. Porter's book gives proof of his knowledge of physiological chemistry and of his scientific attitude of mind. His theories on the dietetic treatment of Bright's disease, rheumatism and other diseases arising from faulty elimination will be challenged by some physicians and dietitians.

For example he is firmly convinced that the eating of fruit is absolutely dangerous and as for sugars and starches, even the easily digested potato, they are, according to Dr. Porter, beyond the pale. The reasons advanced for this somewhat revolutionary theory is that these foods, the acid of fruits and the easily digested starch of the potàto and rice interfere with the oxidation of the blood.

The author is a strŏng advocate of the reasonable use of meat. His plea to avoid food is one of the strongest features of the book. In short, the physician or the food specialist who knows how to weigh and balance nice points of dietary evidence will derive much benefit from reading Dr. Porter. The layman will do well to leave his book alone.

The Economics of Marketing and Advertising. By W. D. Moriarty, Ph.D., Professor of Business Administration, University of Washington. Harper and Brothers, New York. $3.50.

Although planned originally for Dr. Moriarty's undergraduate students, this comprehensive discussion of problems met in the fields of marketing and advertising has grown into a book that will have equal value for practical business men who are interested in applied economics.

One noteworthy feature is the provision made for the business man's acquisition of information in regard to fundamental economic principles of manufacturing, marketing and advertising. This, the author maintains, is an important "pre-requisite" for the manufacturer who is preparing to make a constructive study of his own field. The thesis of the text is, therefore, that it is the economics of marketing and advertising, rather than description or technique, which should receive most stress and which will contribute most to business judgment.

No matter what his product, the food manufacturer will be interested in the chapters on Interdependence of Prices, Economic Functions of Middlemen, Advertising as Analysis of the Market, and as an Administrative Force, Price Maintenance and Competition.

Suggestions are given for charts that will prove helpful in relating expenditures for clerical and other forms of service to the grocery business and there are interesting chapters on cooperative selling and buying.

The book may be recommended to any business man who is eager to put the most in and get the most out of his plant.

Food for the Diabetic. By Mary Pascoe Huddleson. With an Introduction by Nellis Barnes Foster, M.D. Macmillan Company, New York. $1.25.

Dr. Foster says in his introduction to Mrs. Huddleson's little book; "The methods described in this manual are the result of a wide experience in teaching diabetics. No other system, and I have tried many, is at the same time so accurate in result and so comprehensible and so practical for the patient."

Mrs. Huddleson gives first a dozen rules to be observed by the diabetic patient. The discussion of the feeding problem follows and detailed diet tables, recipes and other suggestions make up a hand-book certain to prove valuable to patient, dietitian and physician.

The Calorie Cook Book. By Mary Dickerson Donahey. Reilly and Lee Company, Chicago. $1.50.

Menus with corresponding recipes for the different seasons and for both normal and abnormal conditions of weight.

The book opens with practical suggestions on self-control in diet and these are followed by the dietaries and directions for cooking.

The fact that each recipe is worked out with the energy value expressed in calories is a practical feature.

Unquestionably the person who is responsible for catering to the home table will find many helpful suggestions in Miss Donahey's collections of recipes and dietaries. The chapters on dietetics are not sufficiently important to be taken very seriously. The book, on the whole, however, will give the reader many valuable suggestions.

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Rulings on the Use of Oleomargarine Adopted by Many States

Bills Passed Specify Pure Milk as Basis for Butter Substitute and Militate Against Deception

Bills regulating the use of oleomargarine were passed this year by the states of Massachusetts, Oregon, Illinois, Wisconsin, Colorado, Washington, Minnesota, Missouri and New Hampshire. Similar bills introduced in the legislatures of the following states did not become law: Iowa, Nebraska, Ohio, Utah, South Dakota, Kansas, West Virginia, New York and Vermont. No definite information has yet been secured in regard to California's reception of a bill recently introduced to prohibit the use of hydrogenated oils in edible products, but it is rumored that this bill did not go through.

A referendum has been declared on the laws of Washington and Oregon, which prohibit the manufacture, sale and exposure for sale of oleomargarine made of or containing any vegetable fat, and specify that the milk used must be "pure, fresh, healthful, unadulterated and wholesome milk from which none of the cream or butter fat has been removed." These laws will not be in force until after the general election in 1924.

The laws passed by Oregon, Washington, Illinois, New Hampshire, Massachusetts, Colorado and Minresota are in part, as follows:

OREGON: "It shall be unlawful for any person or corporation to manufacture for sale, sell or exchange, or expose or offer for sale or exchange, any substance containing any milk or milk product and designed or intended to be used, or capable of being used, for or as a substitute for butter, unless the milk contained therein, or used in the manufacture thereof, is pure, clean, fresh, healthful, unadulterated and wholesome milk from which none of the cream or butter fat has been removed, or to manufacture for sale, sell or exchange, or expose or offer for sale or exchange, any substance containing any milk or milk products, and designed or intended to be used, or capable of being used, for or as a substitute for butter, which contains any vegetable fat."

WASHINGTON: "It shall be unlawful for any person or corporation to manufacture for sale, sell, or exchange, or expose or offer for sale or exchange, any substance containing any milk or milk product and designed or intended to be used or capable of being used, for or as a substitute for butter, unless the milk contained therein, or used in the manufacture thereof, is pure, clean, fresh, healthful, unadulterated and wholesome milk from which none of the cream or butter fat has been removed, or to manufacture for sale, sell, or exchange, or expose or offer for sale or exchange, any substance containing any milk or milk products, and designed or intended to be used, for or as a substitute for butter, which contains any vegetable fat."

ILLINOIS: "No person, firm or corporation shall use in any way, in connection or association with the sale or exposure for sale or advertisement of any substance designed to be used as a substitute for butter, the word 'Butter,' 'Creamery,' or 'Dairy,' or the name or representation of any breed of dairy cattle, or any combination of such word or words and representation, or any other words or symbols or combination thereof commonly used in the sale of butter, other than in the corporate or trade name of such person, firm or corporation heretofore incorporated, that is actually engaged in the manufacture of butter."

NEW HAMPSHIRE: "No person, firm or corporation with intent to deceive shall use in any way, in connection or association with the sale or exposure for sale or advertisement of any substance designed to be used as a substitute for butter, the word butter, cream, dairy, cow, or the name or representation of any breed of dairy cattle, or any combination of such word or words and representation, or any other words or symbols or combination thereof commonly used in the sale of butter."

MASSACHUSETTS: "Section fifty-one of chapter ninety-four of the General Laws is hereby amended by inserting after the word 'cattle' in the twelfth line the words, —, or whoever uses in any way in connection or association with an advertisement of margarin, oleomargarine or of any substance designed to be used as a substitute for butter, the name or representation of any dairy animal or breed of dairy cattle, or, with intent to deceive, uses in any way in such connection or association the word 'butter,' 'creamery,' or 'dairy,' or any other words or symbols commonly used only in advertisements of butter,—so as to read as follows:—Section 51. Whoever sells, exposes for sale or has in his possession with intent to sell, any article, substance or compound made in imitation or semblance of butter or cheese or as a substitute therefor, except as provided in the two preceding sections, and whoever with intent to deceive, defaces, erases, cancels or removes any mark, stamp, brand, label or wrapper provided for in said sections, or in any manner falsely labels, stamps or marks any box, tub, article or package marked, stamped or labeled as provided in said sections, or whoever, himself or by his agent sells, exposes for sale, or has in his possession with intent to sell, oleomargarine, contained in any box, tub, article or package, marked or labeled with the word 'Dairy,' or the word 'Creamery,' or the name of any breed of dairy cattle, or whoever uses in any way in connection or association with an advertisement of margarin, oleomargarine or of any substance designed to be used as a substitute for butter, the name or representation of any dairy animal or breed of dairy cattle, or, with intent to deceive, uses in any way in such connection or association the word 'butter,' 'creamery' or 'dairy,' or any other words or symbols commonly used only in advertisements of butter, shall for the first offense forfeit one hundred dollars, and for each subsequent offense two hundred dollars, to the use of the town where the offense was committed."

COLORADO: "No person, firm, or corporation shall by himself, his servant, or his agent, use in any way, in connection or association with the sale, or exposure for sale, or advertisement of any compound or imitation dairy product, or product designed to be used as a substitute for a dairy product, not made wholly from milk or cream, salt, and harmless coloring matter, the words 'cream,' 'butter,' 'creamery,' 'dairy,' or 'milk,' or the name of representation of any breed of dairy cattle, or any word or combination of words embracing them. Nothing in this Act shall operate to prevent the use of such words in giving a true table of composition of any such product."

MINNESOTA: "Butter fat not to be used in substitutes.—No person, firm or corporation shall mix, compound or use any butter fat with or to any oleomargarine or any article or product containing animal or vegetable oils and intended for use as a butter substitute, except that skimmed milk or butter milk may be used in the churning or manufacture of oleomargarine or other similar product. Violations of this act shall be a misdemeanor and shall be punished accordingly. The service of oleomargarine or any other butter substitute to the inmates of any state institution as a substitute for table butter is hereby prohibited."

Mushroom Paste a New Table Delicacy

Mushroom paste, by the jar, is one result of prohibition, according to "The Canner." A New York brewery saw prohibition coming and started a mushroom "farm," utilizing the French method of growing mushrooms with great success. The product is a liquid paste, being about half water, and is very salty. It is designed for use in mushroom soup, as a sauce, and for flavoring creamed chicken or sweetbreads.

France Eating Less Frozen Meat

Two of the largest vessels carrying meat from the Argentine to France are about to convert their refrigerating space into ordinary cargo space, according to a statement juts received by the Department of Commerce from Consul Wesley Frost Marseille. These vessels operate out of Marseille and their capacity for carrying frozen meat amounts to 12,000 cubic meters, out of a total of 55,000 cubic meters on all French merchant ships. This change is considered significant of the diminishing demand in France for imported frozen meat.

American Dietetic Association to Meet

THE annual meeting of the American Dietetic Association is to be held in Indianapolis October 15, 16 and 17 at the Claypool Hotel.

Arrangements have been made for a comprehensive program, which will include speeches by well known dietetic authorities and informal "round table" discussions of individual problems.

Trips are to be taken to various points of interest in the neighborhood, comprising an excursion to the Eli Lilly Laboratory, where great progress has been made in perfecting "Insulin"; a visit to the Polk Sanitary Milk Company for the purpose of observing the scientific treatment of milk; trips to various hospitals and many sight-seeing expeditions. A visit will also be made to the new Home Economics Building at Purdue University, where scientific home economics courses are held under the direction of Mrs. Mathews, head of the Home Economics Department of the university. These excursions will be taken by auto, and will be under the auspices of the chairman, Miss Trout, of the Long Hospital, Indianapolis.

On the afternoon of October 17 a tea is to be given and Mrs. Governor McCray, Mrs. ex-Governor Ralston, the ex-Vice President's wife, Mrs. Thomas Marshall, and Mrs. Demetrius Tillotson, wife of the superintendent of the Methodist Episcopal Hospital, will be asked to serve as hostesses. Mrs. Margaret Marlowe, chief dietitian of the Minneapolis Hospital, will superintend the arrangements in this connection.

Exhibits will be displayed of food, household supplies, the latest scientific equipment, and non-commercial material. This latter to consist of charts, health posters, home economics bulletins and all magazines used in the business management of dietary departments.

The program for the three days of the meeting is to be as follows:

Monday, October 15, 10 A. M.: Opening—Mrs. Octavia Hall Smillie, president of the association. Section on Administration. Speakers, Miss Effie Raitt, University of Washington, section chairman; and Miss Lusby, University of Washington. 2 P. M.: Section on Dieto-Therapy. Speakers, Dr. Russell Wilder, Mayo Clinic; Dr. A. G. Clowes, Eli Lilly Company; and Miss Amelia Lautz, dietitian, Peter Bent Brigham Hospital, section chairman. 7 P. M.: Banquet.

Tuesday, October 16, 10 A. M.: Section on Education. Dr. Ruth Wheeler, University of Iowa, leader and section chairman. 2 P. M.: Sight-seeing trips. 8 P. M.: Speakers, Dr. Louis Burlingham, Barnes Hospital, and Dr. Amy Daniels, University of Iowa.

Wednesday, October 17, 10 A. M.: Section on Social Service. Speakers, Mrs. Gertrude Gates Mudge, section chairman, and Miss Helen Parsons, University of Wisconsin. 2 P. M.: Business Meeting. Tea. 8 P. M.: Miss Lydia Roberts, University of Chicago.

B. Botulinus Succumbs to Science

From Professor W. V. Cruess of the University of California comes the news that bacillus botulinus need no longer be feared as a menace to the public health. According to Professor Cruess this so-called malignant growth is not in itself harmful, for it can be eaten with no unpleasant results and is not infectious, as in the case of typhoid or smallpox. When air is excluded, however, in a jar or can, B. botulinus develops poisonous qualities. On this account, it is necessary to use heat to destroy the germ — which would be entirely harmless if not confined. As the spores of the botulinus thrive in alkaline mediums, such as vegetables, longer boiling is required to render the food ready for canning than is the case with fruits or other acid foods. But thirty minutes boiling is fatal to the most sturdy germs of this variety. The presence of bacillus botulinus, says Professor Cruess, is usually announced by a rancid odor, and its properties are now so well known in our canneries that there is little danger from the use of canned food.

FOR SALE—One six hundred gallon Pfaudler glass lined tank, complete with gauge, thermometer and all fittings, absolutely new. Never been used as bought for ice cream business. B. S. Pearsall Butter Co., Elgin, Illinois.

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Ideals and their Utilization by the Grocer

At the recent annual convention of the National Association of Retail Grocers, plans were disclssed with regard to the development of a "Better Grocers' Bureau" in order to promote improved methods of operation and develop a spirit of cooperation among retail grocers.

The objects and purposes of the association, as incorporated in the constitution and by-laws, are as follows:

"1. To unite in cooperation as much as possible every retail grocer in the United States through active and effective affiliation with State and Local Associations of Retail Grocers.

"2. To coordinate the efforts of these State and Local Associations, so the best interests of the retailer may be efficiently served.

"3. To maintain friendly and equitable relations with the various factors engaged in the production, manufacture and distribution of food.

"4. To persistently stand for a square deal for the retail grocer.

"5. To encourage intelligent merchandising methods and steadfastly oppose questionable and unfair practices in all branches of the grocery business.

"6. To promote fair and honorable competition and aggressively oppose the opposite kind, which is as detrimental to the consuming public as it is to all the factors of food distribution.

"7. To stimulate the spirit of better service, so that the wisdom, economy, satisfaction and community benefit of consistent dealing with the dependable resident grocer may be emphasized and continuously demonstrated to the consumer at all times.

"8. To encourage and make possible the adoption of improved business methods, so that the retail grocer may be the good business man demanded by the requirements of the grocery business.

"9. To develop a higher degree of efficiency in grocers and employees through careful training in all branches of the business.

"10. To maintain an educational service which will provide the fundamentals for the objectives mentioned in the two preceding paragraphs.

"11. To foster favorable legislation and effectively oppose all detrimental proposals.

"12. To constantly aim and persistently work to establish more reasonable business hours.

"13. To vigorously oppose Sunday selling and definitely promote such efforts as will help to accomplish an effective abolition of this practice.

"14. To take our proper place in the business world—fully maintain our integrity in all situations, and so elevate the grocery business that the very best type of young men may be attracted to the trade.

"15. To plan so wisely, build so carefully and operate so effectively, that we may develop an organization of such increasing usefulness that the Association may truly be regarded as an aggressive, practical and efficient agency for the safeguarding of the retail grocers' and the consuming public's best interests.

"16. To establish such departments as may be necessary for obtaining the most satisfactory results in accomplishing the objects set forth.

"17. To meet in Annual Convention."

A "Declaration of Principles," also incorporated in the constitution of the association, stresses the following fundamentals for the guidance of manufacturers, wholesale distributors and retailers who wish to adopt a constructive business policy.

All retail grocers to be members of the local or state associations in their respective localities. That they strive to live up to the Code of Ethics of the association and become members of the Better Grocers' Bureau. The thoughtful study by the public as well as the trade of the problem known as "too many retailers" and the development of a solution of same. The endorsement of established methods of distribution as the most logical and economical means of meeting the distributive problem. Price supervision, for the protection of the public. Protection for the manufacturer against unfair methods of competition resorted to by distributors, and consequent lowering of prices on established brands, selling below cost, etc. Cooperative buying not generally recommended, but sometimes permissible as a protective measure to further efficient service. Wholesaler to be regarded as an "assembler" and should not be denied the privilege of buying direct from the manufacturer. The "quality discount" a necessity, if calculated fairly and allowed to all buyers with equal service in calling for orders and delivery of goods. Taboo on trading stamps and gift schemes, as detrimental to quality of merchandise and deceptive to the public. Factory stores an "unwarranted and un-American encroachment upon the business of the retail merchants of the country," as they distract trade from legitimate retail sources. Contracts should be observed, as should the "guarantee against decline" so long as all buyers are given protection and it radiates from wholesaler to retailer. Advertisements of retail prices are permissible, under fair and cooperative conditions. Credit to be regarded as a valuable asset, based upon reasonable grounds of cooperation with customers. Cash discounts "a premium offered for promptness" which should be reciprocated by prompt payment on the part of retail grocers. Wholesalers' and manufacturers' representatives to be shown every courtesy, as offering propositions to the mutual advantage of all concerned. Honest advertising important, in conjunction with cooperation with the local Better Business Bureaus of the Associated Advertising Clubs of the World for the stamping out of objectionable practices of all kinds, including false statements regarding food.

As a summary of its ideals, the association sets forth "A Good Grocer's Creed." This comprises the conscientious safeguarding of the interests of customers, by means of an intelligent knowledge of merchandise and unquestionable standards and practices in selling goods, efficiency in the economical distribution of merchandise, in order to avoid waste and make a reasonable profit so that future needs may be met; membership in the local Retail Grocers' Association, and, through this body, cooperation with the state and national associations, for the furtherance of better service and better citizenship, the practice of the "golden rule" with customers, competitors and fellow workers.

Foreign Meat Needed in Germany

Heavy importations of meat into Germany are indicated by exhaustive investigations just completed in that country by the Hygienic Institute of the Hanover Veterinary College. Germany's meat production before the war was not sufficient to meet domestic requirements, despite extensive importation of concentrated animal feed. The situation today is much more unfavorable, for Germany has lost 15 per cent of her stock-raising territory, while her population has decreased only 7 per cent. The importation of stock feed has materially decreased, owing to the continued depreciation of German currency and the importation of meat will be indispensable for a long time to come to bring up to the proper standard the feeding of the German people, according to a statement to the Department of Commerce, by Charles B. Dyar, of the American Consulate at Stettin, Germany.

"The pronounced decline of the consumption of meat in Germany is of greater hygienic and economic importance for the future and greater productivity cannot be expected of the German people unless the standard of living is elevated," Mr. Dyar states. "Director Cuno of the Hamburg-American Line, now the German Chancellor, pointed out recently that the importation of large quantities of frozen meat is not feasible for Germany from the economic point of view unless the meat is carried in German ships. Germany has at present only 6 steamers, with a total meat storage capacity of 3,000 tons for this purpose, while England possesses some 280 steamers with a total cold storage capacity of 600,000 tons. Steamers of the kind needed are very expensive to build on account of the elaborate refrigerating equipment necessary, and the German shippers can scarcely take the risk of having them built unless assured of the continued importation of frozen meat for years to come, and everything now indicates that this will be the case."

Whale Oil Not Adapted to Margarin Manufacture

Regarding the statement which has recently been made that whale oil is being used for the manufacture of oleomargarin, Dr. J. S. Abbott, secretary of the Institute of Margarin Manufacturers, has made the following announcement:

"It seems as if it is impossible to remove the disagreeable odor and flavor from some kinds of fish oils and render them useful in the manufacture of some edible products. For several years whale and some other fish oils have been hardened by hydrogenation in Norway and Germany and used in the manufacture of edible products. I recall that during the war a lard substitute was made from Pacific coast herring oil. To the best of my knowledge whale oil has never been used in the manufacture of oleomargarine in the United States, and its use in the manufacture of margarine is probably confined to Norway."

Statements by officials of the Bureau of Fisheries, the Bureau of Internal Revenue and the Bureau of Chemistry bear out the facts given by Dr. Abbott regarding the utilization of whale oil in margarin manufacture.

Can-a-jo-ha-rie the kettle that washes itself

Up New York State, the little town of Canajoharie lies on the bank of the historic Mohawk River. Here the Beech-Nut food and confectionery products are produced in an atmosphere of absolute cleanliness and purity.

Can-a-jo-ha-rie—Indian named—means in the language of the Mohawks, "The kettle that washes itself." Some vision they must have had, those Indians, of the Beech-Nut plant newly spicked-and-spanned every day, so that its sweetness and freshness is felt in each bottle and box that makes its way into the world outside.

In the interests of the pure food movement, the Beech-Nut Packing Company will furnish without cost macaroni and peanut butter exhibits to domestic science teachers, dietitians and others engaged in the dissemination of pure food information.

Beech-Nut

"Foods and Confections of Finest Flavor"

BEECH-NUT PACKING COMPANY
Canajoharie - - New York

WRITE FOR QUOTATIONS

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"Manufacturers of High Grade DISTILLED VINEGARS"

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In 1885 The Helvetia Company put out the first can of sterilized, unsweetened evaporated milk. In 1922 more than two hundred million cans of Pet Milk were used in more than a million homes. Thirty-eight years of standard quality accounts for this remarkable growth. Always rich and uniform in quality, Pet meets every milk and cream need in the home. The Helvetia Company (Originators of Evaporated Milk), General Offices, St. Louis, Mo.

Milk at its Best!

Columbus

A Uniformly Good Product

COLUMBUS never varies. The same zestful flavor is in every pound. Pure wholesome ingredients alone are used —and a taste will prove it.

"COLUMBUS" on a package of margarin is a sure sign of goodness—and a guarantee of wholesome purity.

THE CAPITAL CITY PRODUCTS CO.
Columbus, Ohio
Makers of PURITY NUT

Research Committees to Discuss Wheat Situation

A joint committee on wheat research, recently appointed to investigate the country's wheat problem, is to hold its first meeting in Chicago on the tenth of this month. The seven members of the committee, who are all associated with large agricultural concerns, will consider ways and means for improving the present wheat situation and securing better conditions in future. Psychological influences, including foreign "bearish" reports, are said to be largely responsible for today's low wheat price. Among the suggestions offered for solving this problem are: An increase in consumption; an improvement in the quality of the wheat grown; a readjustment of acreage; and better marketing methods.

Campaign Planned to Popularize Meat

The National Livestock and Meat Board held its first annual meeting in Chicago on July 23 and 24. An educational program for the coming year was discussed with a view to promoting more widespread knowledge of the value of meat as a food.

The methods of accomplishing this result as published in an official statement by the board, are, in part, as follows:

The unification of the efforts now being put forward by agencies in the interest of meat. News publicity in the general and farm press, with regard to the importance of meat in the nation's diet, emphasized by the issuance of recipe books and educational material. An essay contest, with prizes for the best essays on meat. A slogan contest, with the aim of finding the best meat slogan. The setting aside of a fund of $8,000 for research work in regard to meat and its relation to health. Cooperation with the National Association of Meat Councils.

Radio will be utilized also and the economic qualities of meat broadcasted.

The board is planning to establish "meat councils" in two large consuming centers. A number of these councils are already in operation in New York, Jersey City, Rochester, Chicago, and other cities.

New Sugar Refinery for the South

Norfolk, Va., is to have an up-to-date sugar refinery. It is to be installed by the Norfolk Sugar Refining Company, Inc., at a cost of $3,600,000, and construction of the new unit will begin during the next three months under the direction of the Eastwick Engineering Company of New York. Capital from New York City is backing the refinery.

POSITION WANTED

CHEMICAL ENGINEER desires position in production end of food products plant. Five years' experience developing equipment in a well-known factory making machinery for food production work. Experience includes starting off equipment in numerous factories, simplifying and systematizing production. Write for details. Address Box D, American Food Journal.

American Fruit Growers to Meet in N. Y.

The Eastern Apple Exposition and Fruit Show is to hold its next annual meeting in New York City, at Grand Central Palace, November 3 to 10, in conjunction with the American Pomological Society. The program will include discussions by fruit specialists on problems of standard grading, naming of varieties, marketing and distribution, in addition to the growing of fruit. Thomas E. Cross is chairman of the Committee of Eastern Apple Growers, which has charge of the apple show. Other national organizations and horticultural societies in the eastern states will be asked to hold meetings in New York City in connection with the exposition. There will also be trade exhibits by allied industries.

Sirup from Sweet Potatoes

Sirup can now be made commercially from sweet potatoes by a method devised by the United States Department of Agriculture, notes "The Canner" in a recent number. This process has been designed in order to utilize overgrown or undersized sweet potatoes unsuitable for market needs, and also in view of possible emergencies when the price of sugar and sirup soars. Sweet potato sirup can be used as a table sirup, for making colored and short-grain candies, such as taffy, kisses and caramels, or for cooking purposes. It can also be used in baking dark products, like gingersnaps, and may be blended with other sirups to prevent crystallization.

"Red Hots" Instead of "Hot Dogs"

The meat dealers of the country are considering a change of name for "Hot Dogs," on the ground that this title handicaps the sale of sausages. It has been suggested that the term "Red Hots" be adopted and a campaign started to enlist the support of retailers and vendors in this connection, who in turn might gradually accustom the public to the change through the use of artistic posters advertising "Red Hots" in general,, and the merits of meat and sausage, in particular.

Shippers Welcome New Method of Butter Manufacture

A new method of making butter is being tried with much success in Holland, with a view to preventing deterioration for a longer period than is now possible when butter is shipped any distance. In the new process the butter is churned in an atmosphere of pure carbon dioxide, the air being sucked out of the churn and replaced by carbon dioxide. This fills the pores of the butter and keeps out the oxygen, which accelerates deterioration under ordinary circumstances when the temperature is above freezing point.

Baked Apples Now can be Canned

Canned baked apples are the latest invention of a Los Angeles firm, according to a recent issue of the "Western Canner and Packer." This discovery is the result of ten years' experiments and will offer a variation from apple sauce and other canned products.

National Canners Assn. Issues Statement

The National Canners' Association has issued a financial statement covering its "Canned Food Week," which was held March 3 to 10 of this year. According to this statement, the receipts turned in came to $16,975.38, the balance on hand from 1922 being $4,566.70, making a total amount of $21,542.08. The disbursements for Canned Food Week totalled $21,177.97, comprising the following items: Paper streamers, $6,708.92; muslin streamers, $4,588.56; postage, freight and expressage, $6,619.95; stationery and supplies, $1,375.78; labor, $1,035.78; and incidentals, $848.98. The association, therefore, on June 16 had a balance on hand of $364.11.

Herring Flour as a Health Food

Herring flour is a new "health" product on the American market. Factories were erected in Iceland several years ago, through Norwegian, Danish and Icelandic interests, for the preparation of this flour and it is already popular in Norway as a health food. It is also exported to Japan for use as fertilizer in the flower growing industry there. The flour contains 70 per cent of fat and protein, and its manufacture was made possible by the large number of herrings caught off Icelandic coasts every summer. Herring oil is also to be extracted in large quantities for its food qualities, as it is rich in nutriment and can be made both tasteless and odorless by a hardening process.

Recent Patents

The following patents of interest to readers of this journal recently have been issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of twenty cents each. State number of patent and name of inventor when ordering.

1,451,432. Charging of cocoa-butter presses and the like. William E. Prescott, London, England, assignor to Joseph Baker & Sons, Limited, same place.

1,459,069. Method and machine for forming sausages Ferdinand Krause, Port Richmond, N. Y.

1,459,232. Method of preserving food products. Edward Milani, San Francisco.

1,460,307. Machinery for making wafer biscuits, cup wafers, and similar articles. Thomas O. Bates, Liverpool, England.

1,460,510. Preserving compound for pistachio nuts. Salim F. Zaloom, New York City, assignor to Royal Nut Company.

1,461,076. Dough rounding-up machine. Frank H. Van Houten, Beacon, N. Y., assignor to Dutchess Tool Company, same place.

1,461,115. Means for dipping and coating confectionery. Frank R. Giddings, Kalamazoo, Mich.

1,461,410. Nut-shelling machine. James H. Aldrich, Oakland, Cal.

1,461,504. Macaroni-die. Guido Tanzi, Long Island City, N. Y.

1,461,703. Method of treating grain germ and scutellum. David Chidlow, Ridgefield, Conn.

1,462,163. Food product and method of making same. Thedor Braff, Vienna, Austria.

1,462,37. Process of preparing cheese. Gottfried Meyer, Verndale, Minn.

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Enhancing Food Values

Standardization and Vitalization of Milk, Bread and Margarin

By MAURICE FRYEFIELD

THE more recent discoveries in the field of nutrition promise to revolutionize the food industry through the standardization and the vitalization of such food staples as bread, milk, margarin, and a number of other articles of our daily diet. At the same time these discoveries throw a new light upon the subject of disease prevention, and open up new avenues to the amelioration of many of our present deplorable physical conditions.

We have dug deep into the causation of disease, especially from the bacteriological source, but we have not gone to the foundation of those diseases. Recent research has shown them to be chiefly of chemical or metabolic origin. In a land of plenty like ours with all the hygienic education and sanitation is it not surprising that over 6,000,000 school children—one out of every three—should be suffering from some form of malnutrition and retarded development?

In spite of all the activity on the part of philanthropic and welfare agencies, and health and school officials, 78 per cent of all our children have defective teeth; the majority of artificially nourished children are rickety; 25 per cent of our youth is physically deficient; the death rate from degenerative diseases has increased three fold in the last twenty-five years; and most people are physically disqualified, debilitated, or ailing at an age when they should be most efficient.

Probable Causes of These Conditions

Maurice Fryefield

The general consensus of opinion among our able research workers who have tried to determine the cause for such deplorable conditions is unanimous in the belief that most of our diseases are due, chiefly, to the inferior quality of the foods that our civilization and urban life have made necessary.

Most of the foods consumed in our cities do not reach the consumer in their natural and most desirable condition. Many of the vital factors, such as the vitamins and salts, which are extremely necessary for proper metabolism and a positive calcium and salt balance, are lost in the processing of the foods for commerce—in refrigeration, transportation, and in a number of other unavoidable causes.

Modern competition has forced many food producers and manufacturers to give more attention to the appearance and the palatability of their products than to their actual nutritive value.

Moreover, our present civilization, with its large and populous cities and centres of activity, has removed us far from nature and nature's methods. To meet the demands of our congested populations we must gather our foods from every possible source and adapt them to modern commerce and wide distribution.

The consistent propaganda for a more liberal use of milk and vegetables in the diet is a step in the right direction; but this cannot solve the problem. What is more urgent and important is a standardization and a vitalization of our food staples. Not until then can the balanced diet be made possible.

Doctors, scientists, and all others who recommend a more liberal use of milk are justified in so doing, for of all the foods that approximate the ideal for all bodily needs, milk has been found to be the best. No other food contains as much calcium and as much of the other important minerals and salts. But even this food varies in composition and requires standardization. Its quality—especially in relation to the vitamin content—is greatly dependent upon the diet of the cow. It is richer in vitamins during the summer months when good pasturage is available than in the winter months when the cow is stall fed.

The seasonal variation is not the only factor that detracts from milk as the ideal food. We all know that milk is at its best immediately after it is received from the cow. The longer it stands and the more it is handled the poorer it becomes in quality.

On account of geographic conditions it is not possible for the larger centers of life to get milk in its most desirable form. In transit to the city from the numerous farms, the milk is handled and poured many times. It is exposed to many changes in temperature and to oxidation. A longer time than is desirable elapses very often before the milk reaches the consumer.

During this time it loses some of the vital factors. The vitamin potency is very often further disturbed to a degree, by the heating or boiling of the milk. The child drinking this milk is deprived of the most important elements that are conducive to proper nourishment and development.

Another food staple used even more than milk in our daily diet is bread made from refined white flour. This flour reaches the centers of distribution robbed of its vital factors, because of the milling process necessary for adapting it to the enormous demands.

The milling process removes the hearts and the covering of the grain that are rich in the vital and necessary salts.

Our cereals and rice, likewise, must be degenerated to make them stable; and further processing is necessary to render them attractive to the eye. So that by the time they reach the table they have but little of their original and normal value.

The same artificial conditions prevail in the fruit industry. Most of the fruit is prematurely picked, packed, and shipped to be consumed months later, ripened in dark and cold storage, and deprived of the vitalizing effects of sunshine.

In view of these adverse conditions it is hardly possible for our urban population to get from our foods as they come to our table all of the vital factors needed by the body.

Our research workers and leaders of public opinion do not seem to consider the above facts in their "back to nature" advice. It is impossible to revert to natural conditions for the large majority of us. To do so would mean the destruction of our cities and commerce, and the scrapping of our civilization.

Instead of going back to nature we must readjust and adapt nature to our modern civilization.

The truth remains that we cannot depend upon our present supply of food. We must obtain from some rich and reliable sources more stable elements which can be incorporated with these foods in their processing to make up for the loss of these vital factors. In this way only can we provide a diet at present that will insure normal development of our young, and maintain the vitality and the efficiency of the rest of our population.

The more recent discoveries point the way to such practical food combinations. Based upon the work of such authorities as McCollum and his collaborators, Funk, Hess, Sherman, Iscovesco of the Sorbonne, and numerous others, we have come to learn that a diet is balanced when it contains the basal nutritive factors and the so-called vitamins in such proportions as the requirements of the individual demands for normal daily activity, and enough for the building up of a reserve for future emergencies against the inroads of infectious diseases.

We now consider the theory of calories as having only a relative value and as serving technically as a means of measuring food requirements according to their quantitative value. We look to the vital factors for a balancing of the diet.

We have become familiar with fat-soluble A, water soluble B, water soluble C, and the more recent vitamin D, or the antirachtic factor.

Very little is known as yet about the chemical and physical characteristics of these vitamins, but we know the source from which they can be obtained, and that their presence serves as a protection against malnutrition and certain well defined diseases.

Up to the end of last year—until McCollum proved the contrary—it was believed that vitamin A was the antirachitic factor. Extensive research showed that vitamin A did not prevent nor cure rickets; and that milk and butter which are rich in vitamin A did not always contain the antirachitic factor, and never in sufficient amounts.

Rachitic animals, however, which were fed on small quantities of cod liver oil were able to overcome rickets.

Although cod liver oil has been known to be a specific for rickets for almost three hundred years, it was never clearly understood what factor in the cod liver oil constituted this remedial potency.

The discovery by McCollum of this principle established a new vitamin, which has been designated by some as vitamin D, and as "the unknown factor" or "X" by others.

Whatever the nomenclature may be, the fact remains that this antirachitic vitamin or factor is the most important of all the vitamins, for upon it depends the proper metabolism of calcium and the other precious salts which are so necessary for the development of a sturdy frame and sound teeth in children.

Another reason why this vitamin D is of so great importance is the fact that whereas the other vitamins are to be found in a large variety of foods, this one cannot be so easily found and its source is limited.

Thanks to the extensive research of a famous French authority we have found a rich source from which this valuable antirachitic vitamin can be obtained. This authority experimented for several years with numerous oils, and reached positive conclusions that cod liver oil was the only oil that contained the antirachitic factor.

Further research showed him that the potency of cod liver oil is due to some chemical factor not represented by the fats proper which constitute the bulk of cod liver oil. He found this factor to be a liver lipoid, which is identical in every respect to the liver lipoid which he was able to extract from the livers of other animals.

Adapting Discoveries to the Improving of Our Foods

The discovery of these important accessory food factors and our present knowledge of their source in nature makes it possible for us to combine them in a practical and economical way with the various food products which have been shown to lose their vital factors in the processing for commerce.

It also points the way to the enhancing of the nutritive value of some of our food products which have hitherto been considered deficient in vital factors.

We use modern methods in farming, in manufacturing, and in mining, based upon discovery and research. We furnish the soil with chemicals that are needed for the production of better harvests and crops. Why should we hesitate to make use of our newer discoveries in nutrition for the standardization and the vitalization of food? No other factor is more essential to progress and well being than the supply of proper and well balanced food.

In fact some of the vitamins are now being used in food combinations to advantage. An autolized yeast called "Marmite" in England, and known as "Vegex" in the United States, is now being widely used in food combinations. This yeast product belongs to the vitamin B classification, and was used in England long before it was known to be rich in this vitamin factor.

One of our leading bakers has made an unusually fine attempt at a super bread, by combining with the white flour liberal amounts of water soluble B and fat soluble A, and by restoring phosphorus and salts of the hearts and bran of the grain lost in the processing for commerce. The bread is becoming very popular.

It could, however, be improved upon by the addition of the antirachitic factor which assured the proper appropriation of the salts and minerals of the bread.

Sources of the Antirachitic Vitamin

Of the two available rich sources of the antirachitic vitamin, it would appear that the liver lipoid adapts itself more readily for such combinations. In the first place, it is free from the nauseating taste and odor characteristic of cod liver oil. It is also more concentrated and stable and may be kept indefinitely without spoiling, whereas cod liver oil becomes rancid and deteriorates.

Another reason for the preference of the liver lipoid is that it is stand-

(Continued on page 447)

What Cost Accounting Means in Food Manufacture

Outstanding Success has Already Attended Efforts of Some Branches of the Industry to Develop Proper Methods

By E. W. McCULLOUGH
Manager Fabricated Production Department, Chamber of Commerce of the United States

IT has been only within a comparatively few years that stress has been placed upon the importance of modern cost accounting as an aid to the management of an industrial enterprise. In fact, within ten years the then Chairman of the Federal Trade Commission pointed out that a very small proportion of the manufacturing companies of the country operated cost accounting systems. Almost over night, however, there has been a very great change in this matter. Cost accounting has become recognized as an important tool of management, and countless concerns have introduced cost accounting systems of one kind or another into their businesses.

Although this change of attitude on the part of industrial executives has been commendable, the utilization of cost accounting was at first attended in altogether too many instances with unfortunate results. A good deal of mystery seems to have surrounded cost accounting, and until recently there has been little exact knowledge of cost accounting methods as applied to individual lines of business.

Some industrial managers have assumed that they could buy cost systems ready made and from them secure all of the alleged benefits of cost accounting. Others have imagined that there is little difficulty in the development of cost accounting technique and have worked out home made systems, oftentimes giving the work to bright clerks in their organizations who, unfortunately, have not had the background of technical experience necessary to successful results. Still others have spent many thousands of dollars on elaborate technical systems and have ensnared themselves in the meshes of the voluminous details and red tape of these systems. These conditions, perhaps, have done much to surround cost accounting with mystery, and have caused many to look upon it with suspicion.

It is evident, however, to those who have been able to study the progress of cost accounting during the past few years, that this progress has been real and substantial, and that today those concerns which are best prepared for the present keen competition and narrow margins of profit, are those which have workmanlike cost systems in use, presided over by competent technical cost accountants.

Success Attained by Food Manufacturers

The manufacturers of food products have not been backward in their utilization of cost accounting. While the technical press may have given more attention to cost methods of the machine shop or foundry than to those of the baker or macaroni maker, outstanding success has been attained by representative concerns in various branches of the food products industry. The list of food industries which have taken up the matter of uniform cost accounting—about which more will be said later—is decidedly impressive. It includes among others the following: the biscuit and cracker industry, macaroni industry, pickle packing industry, vegetable canning industry, meat packing industry, coffee roasting industry, rice milling industry, ice cream industry, and the milk industry. Noteworthy perhaps among the omissions, is the wheat flour milling industry.

What is the real significance of cost accounting? In many industries, particularly those engaged in the manufacture of specialties as, for example, special machinery, a knowledge of costs controls selling prices. In such cases the executive who knows his costs insures a profit for his business through the establishment of selling prices that provide the necessary margin. In other industries—and in this list may be included many of the food industries—selling prices are controlled largely by supply and demand, but here cost accounting is of no less value. Accurate costs reveal whether profits are made or losses incurred. They indicate how economies in the business can be effected.

In some lines of business the manufacturing cost is the important consideration, for the selling and administrative costs are relatively small compared with the manufacturing costs. In the case of many of the food industries, however, the opposite is true. As the Joint Commission of Agricultural Inquiry has stated in its report on "Marketing and Distribution of Agricultural Products":

> "The primary purpose of manufacture is to operate plants and make commodities. Selling and delivering is a necessary adjunct, considered chiefly as a means to the continuation of manufacture. The processes of manufacture are tangible and lend themselves readily to engineering skill; therefore, manufacturers have reduced production to an almost exact science and in time of competitive need have devised more economical processes of manufacture. This, however, has not been the case in dealing with the problems of distribution. . . It is quite generally known that it costs more to sell and deliver marketable products into which agricultural commodities are converted, than to produce and manufacture them. On the basis of the vast operation of agriculture and business, a very slight improvement in methods might readily effect a saving of billions of dollars annually."

The Joint Commission shows, for example, that for each dollar of selling price of eight selected food commodities during 1921, the cost of raw material was but 44 cents, the cost of manufacture 18 cents, and the remaining 38 cents included cost of selling, advertising, transportation, taxes and profit. In the case of bread, the cost of manufacture was but 26 cents of the sales dollar, while the selling cost was 20 cents. Rolled oats—the manufacture took but 13 cents, while the selling and advertising expenses amounted to 22 cents. Peanut butter—manufacture 9 cents, selling and advertising 15 cents. Macaroni—manufacture 20 cents, selling and advertising 12 cents. Laundry soap—manufacture 12 cents, selling and advertising 15 cents.

In the food industries then, it is apparent that cost accounting is of particular importance in the intensive study of the costs of selling and distribution. This, however, is a field in which cost accounting generally is but commencing to be broadly understood, and the food industries should lead the way in the utilization of cost accounting to reduce these expenses.

Some Specific Advantages

Let us now examine some of the specific advantages of cost accounting. The following may be mentioned:

A good cost system shows the executive the results he is securing from his force. It provides the cost of individual operations, reveals efficient employees, shows up inefficiency, enables the establishment of standards for use in connection with the budget system mentioned later, and gives all the facts regarding productive efficiency of workers.

A good cost system considers materials as money. It keeps the investment in materials at the lowest possible point consistent with best results. It reveals inefficient uses of materials and the possibilities in some lines, such as candy, of substitution of cheaper materials without loss in quality.

A good cost system reveals the constant drains on profits arising from the manufacture of defective and second quality foods. Where no cost system or a poor one is in use, these losses sometimes get by unnoticed.

A good cost system reports on the operations of machines and equipment, shows up idleness of machinery, reveals the high cost of maintenance, brings out the differences in efficiency between two types of equipment, and shows where additional equipment is necessary for general economy in operation.

A good cost system points out in detail the selling and commercial costs. It provides these costs by individual products sold, by individual products for each territory, salesmen's costs by commodities, and, in fact, it reveals every element in the cost of distribution.

Technical Problems

Cost accounting in the production of food presents many interesting technical problems. In the majority of these industries the cost of the raw material is a large item and hence its inclusion must be handled with especial intelligence and care.

Then in many lines there is the by-product problem. That, for example, is true in the milling industry and in the milk industry, where surplus milk must be converted into ice cream, cheese and other products.

In the meat packing industry there is what is known as the problem of joint products. The meat packer's problem is different in that it is the reverse of ordinary cost accounting procedure. By conventional cost accounting methods the cost of the final product is obtained by combining the costs of the parts. In the case of the packer, however, he starts with a steer or hog, for example, and the products are steaks or hides, hams or lard. The point has been well illustrated by the automobile. The manufacturer of a new automobile finds his costs from the sum of the costs of the individual parts. Suppose, however, that a second hand automobile were purchased for one thousand dollars and it was dismantled and the parts offered for sale individually. In this case, what would be the cost of the bumper, or transmission, or spare tire?

The packer, in considering the problem of the costs of the products of the hog can only compare the cost of the live hog as he gets it with the value of the products from that hog.

Reference has already been made to the fact that numerous food product lines have developed uniform cost accounting methods. This is an activity which is particularly interesting and valuable. Let there be no mistake made as to what is meant by uniform cost accounting. It doesn't mean, for example, that the various concerns in an industry come together, compare their costs, and arrive at average figures which they will all use in the establishment of their selling prices. Far from it, for such procedure is neither legal nor an intelligent way to handle the problems of the management of a food products company. Again, it does not mean that all concerns in an industry large and small have various forms designed and printed which they will use in a hard and fast way. Here again such procedure is neither practical, nor conducive to the best results.

Members Must Co-operate

Actually uniform cost accounting means a co-operative study by the members of an industry to arrive at the underlying principles of cost accounting in that industry and to develop the general methods by which costs may be found to the best advantage. In each industry there is the "one best way" to get at the problem of obtaining the costs of production and distribution, and co-operative studies properly undertaken will most certainly reveal the most effective methods thus far developed in cost accounting. In this connection, however, it should be appreciated that cost accounting procedure is constantly developing and being perfected. The work of devising uniform cost methods for an industry is never done. Continuing attention by the best ability the industry affords is needed to keep the cost methods up-to-date.

The Fabricated Production Department of the Chamber of Commerce of the United States has given much thought and attention to this problem, and has been in touch and co-operated with more than one hundred industries which have taken up cost accounting activities. As a result of these contacts, it is the opinion of the department that each industry should engage in cost accounting activities along right lines.

In the first place, however, members of an industry must convince themselves of the underlying importance of the conduct of such studies. Until this is the case activities launched are likely to meet with but partial success, but when the members of the industry have convinced themselves and are ready for the work they should select a committee of not less than five nor more than ten executives in charge of cost accounting work in the employ of member companies of the industry, which committee will be charged with the development of the policies and execution of the technical work incident to the development of the uniform methods.

The development of uniform cost methods takes time. Nothing is gained by working up a uniform cost system in a hurried way for in the past, as stated earlier in this article, many failures have been recorded by individual concerns in connection with their individual cost accounting efforts and while failure by one concern is expensive, failure of the system or methods devised for all members of the industry is far more serious.

The work of this committee is usually recorded in a cost manual, which brings out precisely and clearly the conclusions arrived at and forms a handbook of inspection to those who undertake to install the system.

When the cost methods have finally been approved and accepted by the trade association representing the industry, it is important that the practical working accountants of the industry be enlisted in a cost council. Such a council should have at least four meetings a year. Where it is practical, accountants can get together and study their common problems, secure interpretation of doubtful points in connection with the uniform methods, and oftentimes they can assist in still further perfecting these methods as a result of their practical experience in the use of them.

Recently cost accounting has been supplemented by the budgeting of the finances and activities of a business. Careful estimates of sales over a period, say, of the six months in advance is made. Based on this estimate, there is a study of the raw material requirements to meet this sales quota. There is a determination of the labor forces that will be necessary to turn out the required production, and a detailed analysis of the overhead expenses that must be incurred. Lastly, there is a forecasting of the financial turnover, and of the condition of such accounts as, cash in the bank, accounts and notes receivable, accounts payable and so on.

Armed with such a budget, based on past performances as shown by the cost accounting, and by the production, employment and financial statistics, the manager of a plant is in the best possible position to direct his business. As each month goes by he is in a position to check his budget allowances with the actual costs, and thus if necessary to modify his budget allowances, depending upon whether his forecasts of business are too great or too small. No one expects to hit on the exact figures, nor is there any less value attending the use of a budget system because there are these variations. Briefly, the budget system, in co-operation with the cost system, gives equipment to the executive which is similar to the compass and barometer used by the skipper of the ship.

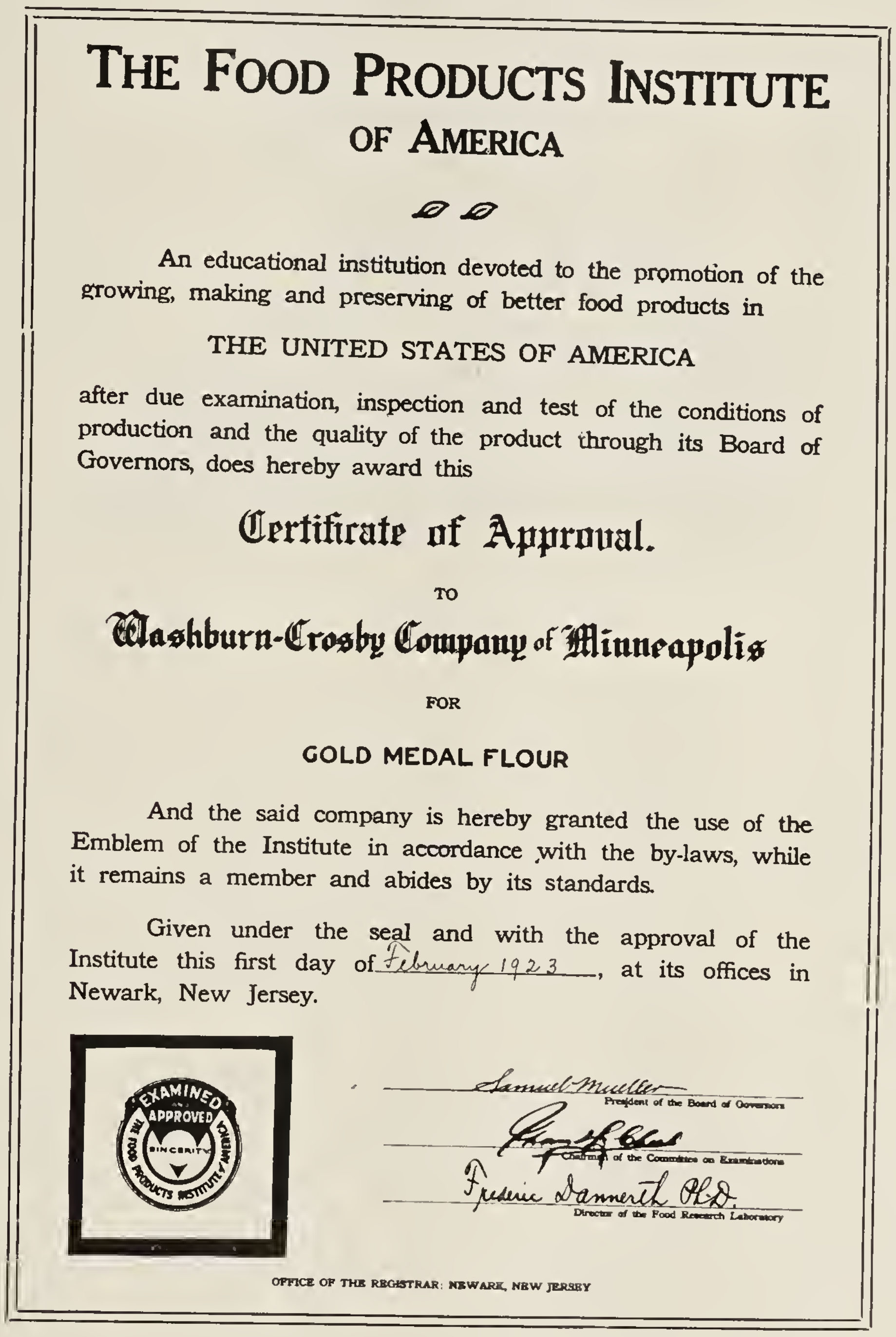
When we talk cost accounting and budgetary control, it is sometimes assumed that we are talking solely for the benefit of the manager of a company, but that is not the case. The employee has a prime interest in cost accounting. He will know that when

THE CONFERENCE TABLE

The Food Products Institute of America

Annual Report of the General Secretary to The Institute

By DR. FREDERIC DANNERTH



THE FOOD PRODUCTS INSTITUTE
OF AMERICA

An educational institution devoted to the promotion of the growing, making and preserving of better food products in

THE UNITED STATES OF AMERICA

after due examination, inspection and test of the conditions of production and the quality of the product through its Board of Governors, does hereby award this

Certificate of Approval.

TO

Washburn-Crosby Company of Minneapolis

FOR

GOLD MEDAL FLOUR

And the said company is hereby granted the use of the Emblem of the Institute in accordance with the by-laws, while it remains a member and abides by its standards.

Given under the seal and with the approval of the Institute this first day of February 1923, at its offices in Newark, New Jersey.

Samuel Mueller
President of the Board of Governors

Chairman of the Committee on Examinations

Frederic Dannerth Ph.D.
Director of the Food Research Laboratory

OFFICE OF THE REGISTRAR: NEWARK, NEW JERSEY

YOUR general secretary has pleasure in presenting herewith his first annual report to the Food Products Institute of America. From this it should not be inferred that the "institute idea" is only one year old. As it stands today it is the result of six years of thought on the part of your general secretary, and the executive committee.

During the past year we have been very busy finding out the spheres of usefulness for our organization. Today our activities are organized and well defined. Our place among the Clearing House institutions of the country is recognized and known. We have found the men and women best qualified to help in this work, and we have organized this group of specialists into an Advisory Council.

We now stand ready to do a most effective work for the interests engaged in agriculture, food manufacture and food preservation, in the United States. The States associations of the various food trades such as candy, ice cream, carbonated beverages, dairy products, and bread, devote their attention to local issues and local problems in merchandising and labor employment.

The national trade associations have focused their attention on the problems of inter-state commerce, tariff discussions, freight rates and price regulation. They have given little or no attention to the exchange of experiences with the 30 odd national associations of this group. We found that each national trade association is at work gathering experience independently of every other national trade association. There has been no attempt at bringing the executive officials of all the thirty groups together at one time to hear and discuss problems which have a common interest.

These are some of the thoughts which formed the base of the present Food Products Institute of America. The dissemination of knowledge and experience in foods among the thirty branches of the food industry in America—whether it be a problem in growing, manufacture or preservation of foods, this is the aim of our institution.

As a parallel thought on this subject we come to the matter of closer contact between the magazine and trade journals which record the news of thirty branches of the food industry. This phase of our work will ultimately result in keeping each branch in touch with the economic developments of the other 29 branches of the industry.

The work of the Institute is divided into twelve co-operating departments. It is the province of the department heads to discern the vital issues which affect the food industry and to bring them to the attention of the general secretary. In this way each question will receive proper consideration by all national trade associations at the same time. This will result in cumulative action by the food industry as a group.

Services Rendered

The Institute is in good position to promote the business interests of food groups which have no trade association. The Institutte should stand ready to help the wholesale consumers of food raw materials to a better knowledge of their products. This is a kind of field service which should not be monopolized by any one corporation, because the interests of wholesale consumers of food products are greater than the interests of any one producing corporation.

The Food Products Institute of America must study the needs of Agriculture and bring the agricultural interests into closest harmony with the industrial interests of the states and of the nation.

Agriculture is the principal business of our country. It is quite fitting that business men and industrial managers should support agriculture, and that agriculturists should keep step with business. There is no need, no opportunity for a "farm bloc" or similar contrivance in these United States.

The institute therefore acts as the agent and servant of agriculture, industry and commerce, endeavoring at all times to keep these groups in tune with one another. Specialization has made these 3 groups very much dependent on one another. And that is why each group must become better acquainted with the economics of the other group.

The complex inter-relation between soil, capital and labor has not been given much study by our citizens. Labor must learn that the progress of the world is measured by "work accomplished." Higher wages for little work, means that the workmen's money will finally have less purchasing power. The labor problem may be analyzed into wages, shelter and food. But today we know that food is the fundamental of our labor problem.

Agriculture used to be of interest, only to farmers. Today it is a matter of interest to all of us. It is important therefore that manufacturers, business men and consumers understand and appreciate that the success of agriculture in our country means success, welfare and prosperity for all our people.

An old Chinese philosopher once said "All human endeavor is like a tree. Agriculture forms the roots, and manufactures form the branches and leaves. Kill the roots and the tree dies."

The American farmer, taken as a unit, has not yet learned the lesson of "greater production per acre" which is the basic requirement in European countries. Then, too, the efficiency of his live stock is very low compared with that of his competitors in other countries.

Denmark, a country having one-third the area of Pennsylvania, occupies a leading place in agricultural production; and that Government now has agricultural experts attached to all its important foreign Legations.

Three Groups in the Food Industry

The corporations interested in the food industry may easily be divided into three groups; the wholesale producers, the wholesale consumers, and those interested in the preservation of foods.

The first class includes those who produce: (1) sugar, (2) edible fats and oils, (3) flour and starch, (4) fresh fruits, (5) fresh vegetables, (6) milk and dairy products, (7) meats, (8) fish, (9) poultry, (10) corn and corn products, (11) flavoring matters, (12) ice.

The second group includes the makers of: (13) candy, (14) ice cream, (15) bread and baked products, (16) meat products, (17) carbonated beverages.

The third group includes producers of: (18) refrigeration, (19) table salt, (20) vinegar, (21) ice.

These 21 groups then, are these which should receive the immediate benefits from the activities of the Food Products Institute of America. But at the same time the Institute must stand ready to render services to the thirty national trade associations whenever it is called upon for such services.

In this way the Institute will automatically become a clearing house for information pertaining to finance, economics, commerce, and technology of the entire food industry in the United States.

The national value of such an organization in times of peace or war, is so tremendous that it can hardly be estimated in terms of dollars and cents.

The Institute now includes in its membership, 30 corporations, with 46 manufacturing plants or establishments for food production and preservation. These plants are located in 16 different states of the Union. In other words, the Institute has within one year become known across the continent, and large corporations of the food industry look forward to the time when the Institute will be the clearing house of the entire industry. The attainment of this end will depend on the formation of an endowment fund, created and supported by all the interests which grow, make or preserve "better foods" in our country. The program of the Institute must be published and made known throughout the United States.

Twelve Co-operating Departments

In the organization of the Institute considerable thought was given to the matter of educational work in economics, public welfare, and technology. As a result of these studies, the following departmental activities have been established, and grouped under the divisions for these three major subjects.

ECONOMICS

1. Department for economics of food production — Studies the growing plant products for food, the rearing of animals for meat and other edible products, the production of foods in manufacturing establishments, the sources of raw materials, difficulties of manufacturing processes, and the marketing of finished products.

2. Department for accounting and statistics — Installs systems for cost finding, conducts inventories, supervises audits, makes appraisals, collects statistics on production of foods on farms and in factories.

3. Department for Distribution — Studies problems in freight transportation, packaging and merchandising; studies the means for bringing farm products to the food product manufacturer and to the retail consumer; discovers new sources of supply for raw food materials, and brings these sources to the attention of wholesale consumers.

4. Department for law and legislation — Investigates unfair trade practices and food laws; keeps track of new legislation in the several states; compiles the food regulations of the national, state and city authorities; compiles information on fire hazards in food factories, accident insurance, and import tariffs.

PUBLIC WELFARE

5. Department for sales promotion — Collects information on advertising on: outdoor bill-boards, direct-by-mail, magazines, trade journals, newspapers, street-cars, remembrances, food expositions, store demonstrations, public lectures, radio broadcasts, and contact with women's clubs.

6. Department School of Cookery — Conducts kitchen tests on new products; prepares recipes for cooking, and for menus. experiments on ways to use foods to advantage in the home.

7. Department for disease preventon — Prepares reports on the proper use of foods for maintaining the blood of the body in healthy condition. Provides the public with information showing the relation of foods to the public health, and to the normal development of mind and body. Secures data showing the difference between foods, medicines, and poisons. Prepares information on dietetics for hospitals and institutions.

8. Department for Physiology and Nutrition — Studies calories, protein values, balanced meals, and vitamins. Studies nutrition problems in hospitals and other institutions. Studies the organs used for ingestion, digestion and secretion. Studies cases of under-feeding and over-feeding in babies and children. Publshes information on how to keep well and grow thin; how to choose foods for putting on flesh.

TECHNOLOGY

9. Department Food Research Laboratory —Conducts investigations related to food production in factories. Conducts agricultural investigations of soils, fertilizers and soil poisons. Conducts researches on the production of new and attractive food products. Makes investigations and tests of water supplies, food raw materials and finished foods.

10. Department for Engineering — Studies all machinery problems, more especially those concerning humidifying, drying, heating, refrigerating, ice manufacture, cold storage warehouses, autoclaves, vacuum driers; methods of preserving foods in vacuum or by sterilization. Makes studies on the use of certain machinery which is now known to only one or two of the 30 branches of the food industry.

11. Department for Biology — Makes studies in bacteriology, fermentation, enzyme action, putrefaction, decomposition and food decay.

12. Department for factory sanitation and public health — Makes studies in ventilation, fresh air, sewerage, illumination, and cleanliness in factories Studies bathing, breathing, temperature and humidity in the home.

The Advisory Council

The following specialists have already signified their willingness to serve on the Advisory Council of the Institute and supervise the work of the several departments

Mr. William Lybrand, Certified Public Accountant, New York City.

Miss Alice Bradley, Head of the School of Cookery, Boston, Mass.

Dr. Casimir Funk, Consultant in Biological Chemistry and Vital principles.

Miss Winifred Stuart Gibbs, Consultant in Disease Prevention.

Dr. Frank C. Gephart, Consultant in Factory Sanitation and Public Health.

Miss Mary L. Caufield, Specialist in Domestic Science.

Mr. Robert Schwarz, Consultant in Engineering applied to food factories.

Mr. Charles L. Glabau, Consultant in Technology of Baking Industry.

Mr. Waldo P. Houchin, Consultant in food sales promotion.

Mr. Henry John Nelson, Counsellor at Law, Philadelphia.

Dr. Frederic Dannerth, Director of the Food Research Laboratory, Newark, N. J.

NEW WORK IN FOOD RESEARCH PLANNED

By COLEY B. TAYLOR

Associate Editor, "The Glass Container"

S. Henry Ayers

IT will undoubtedly be of interest to the workers in food research to learn of the recent appointment of S. Henry Ayers, Bacteriologist of the Bureau of Animal Industry, Washington, D. C., as the Director of Research of the Glass Container Association laboratories. Mr. Ayers has long been known in scientific circles for his careful working out of various important problems of the milk industry, and for his many publications dealing with those problems.

The program of the research department of the Glass Container Association has not been fully outlined as yet, but it will be concerned with the important problems of food preservation and processing—including carbonated beverages, and with detailed, constructive study related to sterilization, pasteurization, and means of recognition and destruction of poisonous bacteria in all types of food products. It is expected that the careful research contemplated in these fields will be an important contribution to the preserving industries, since continual study will be made of the effects of sterilization in processing foods of various kinds with reference to the amount of processing necessary to dispose of all pathogenic organisms, such as botulinus, streptococci, colon bacilli, and others; and also in establishing the relationship between degrees of heat necessary to kill these pathogenic organisms, and the degree of heat necessary to preserve the nutritive and attractive qualities of the food. Some valuable individual work has been done along these lines, but it is generally conceded that, taking the field of preserved foods as a whole, few authoritative results have been announced.

Mr. Ayers' paper on "The Present Status of the Pasteurization of Milk," issued by the Department of Agriculture, is gaining a wide recognition, not only in the United States, but in England, for the subject of pasteurization is one that becomes increasingly important with the increase in population and in the consumption of milk. In some sections of this country, and to a much larger extent abroad, the people are not convinced of the value of pasteurization. Mr. Ayers' article is a very important contribution toward enlightening those who are ignorant of the pasteurization of milk and its value, and in the establishment of higher standards in public health.

Mr. Ayers' research in food processing promises to be very interesting and of first rate importance, since he has long been concerned with the problems of the recognition and destruction of disease-bearing or disease-producing organisms. His work with the problems of the milk industry covers a period of many years, and, since milk is probably the most delicate of all foods, the most susceptible to pollution, and sensitive to processing, he has had an exceptional training for the problems that will face him in connection with processing carbonated beverages and the foods that are less delicate, such as vegetables and fruits, meats, fish, condiments, and food specialties.

In the past, Mr. Ayers' research, and his publications have won signal attention, not only in scientific and official circles, but also among the practical men actively engaged in the industries in which his research was directed. His writings, issued by the Department of Agriculture, have been translated, and have found a wide circulation in Europe as well as in the United States. Mr. Ayers future program is very promising in its scope, and there is no question but that his work will be of importance both from the scientific and practical viewpoint.

The public health is perhaps the greatest and most important problem of a community, whether that community be a family, a small town, a nation, or a continent. In simpler times when the family raised nearly all of its food on the home farm, the housewife could be absolutely certain of the cleanliness and purity of the food she set before the family. In the case of vegetables and fruits, she saw them grow, and, more often than not, she picked them from the garden or field and prepared them for the table, or put them up for winter by every means of preservation that she knew. Her cellars were stocked like a small grocery store with canned foods for the winter.

But in our modern complex civilization, at least half of the housewives live in the cities, and are not so privileged as their country sisters. They are dependent almost exclusively upon the product of commercial food packers, dependent upon their knowledge of food processing, and upon their ideals of production. Fortunately, by and large, among the food packers, quality ideals are maintained; but as yet little research has been done to find out the most efficient means of processing, and the best means of guaranteeing the product free from pathogenic organisms.

There are many problems that confront the sincere food packer, and the food research worker. They will not be solved in a day, but rather by long and careful work, and an involved study of bacterial behavior under processing and storage conditions. It is to these problems that Mr. Ayers intends to devote his attention in his work in the Glass Container Association Laboratories, and in the light of his past experience, a successful solution to some of these problems may reasonably be prophesied.

American Specialty Manufacturers Meet

The American Specialty Manufacturers will hold their fifteenth annual convention in Minneapolis, September 26-28. Headquarters will be at Hotel Radisson. A good general program has been arranged with many interesting addresses, and the lye, soap, and cereal sections will hold special meetings.

Fruit Exposition Coming to New York

The Eastern Apple Exposition and Fruit Show will be held in Grand Central Palace, November 3 to 10, for the purpose of arousing interest in eastern markets for eastern fruits. Exhibits will be prepared which will emphasize and encourage better grading, packing and marketing of fruit. The exposition, which will cover two floors of Grand Central Palace, will afford a common meeting place for producers, consumers, and wholesale buyers.

In addition to the men in the fruit industry, members of a number of allied industries have been invited to exhibit including the honey producers, maple producers, glass manufacturers, and the canned fruit, cider and vinegar men.

CONVENTION NEWS

Dairy Food and Drug Officials Meet in Duluth

Commissioners and Manufacturers Meet on Common Ground at Annual Convention

By H. K. BARNARD

The twenty-seventh annual convention of the Association of American Dairy, Food and Drug Officials, held at Duluth, Minn., August 14th to 17th, was a different convention from most of those which have brought the food officials of the country together. It was different because all the speakers in discussing their subjects laid stress upon the necessity for co-operation between the food official and the manufacturer. It was different because no issues are pending between manufacturers and commissioners, and so both groups met on a common ground without any of the feelings of hostility or distrust which have in years past been so prominent.

President Miller in his address said:

"Co-operation is the basis upon which this organization is founded and has made possible its accomplishments. No state can secure the best results in the elimination of adulterated and misbranded goods except through mutual co-operation with city departments, officials of adjacent states and the various agencies of the U. S. Bureau of Chemistry.

"Co-operation, however, should not stop with agencies established by law, but should extend to members of the industries and to dealers whose businesses are regulated. We are living in a day of organization. Practically every industry is organized. It is a notable fact that several of these organizations of food manufacturers have adopted so-called codes of ethics that embody the very principles underlying the laws and regulations which govern them. Instances can be cited in which industries have done far more to elevate the industry as a whole than could have been accomplished in a much longer time through legal authority alone.

"Industries are establishing schools for the technical training of the men who are engaged in the actual operation of manufacturing, and their courses of study include and emphasize such subjects as purity and quality of materials, sanitation in handling and health of employes. Some of our largest industries have been revolutionized within recent years through the efforts of their own members. The closest co-operation should exist at all times between food and drug officials and the members of those industries which have set and are constantly striving for higher standards, both of quality and products and sanitation in manufacturing practice. Such co-operation does not mean annulling in any way the spirit of food and drug laws, but it does mean a better mutual understanding between manufacturers and dealers and officials of each others problems and the consequent elimination of antagonism and friction."

One entire day was devoted to the trades and many leaders in the food industries presented their views on food legislation and food control. In every case the desire expressed was for a more complete enforcement of the laws and especially of laws regulating advertising, misbranding and false advertising. The usual plea for uniformity of food laws was stressed by the representatives of the food industries.

The most interesting feature of the trade session was a discussion of a uniform method of handling spoiled canned goods. Recent rulings of the Department of Agriculture prohibit the interstate shipment of spoiled canned goods back to the canner for credit redemption. While canners are in thorough accord with the purpose of all governmental and state health and food agencies in removing swells and spoiled canned foods from the market, they recognize the difficulty in giving the retail grocer or wholesale distributor proper credit for unsound goods unless some method is provided by which the goods may be inspected and the quantities rejected totaled.

The canners propose the establishment of zone warehouses in each state, to which spoiled goods can be sent back for credit. The wholesale interests, on the other hand, declare the plan to be unfeasible because of the high cost of collecting from retailers and reshipping. They propose that a discount of one-half of one per cent on all invoices be allowed to all wholesalers to cover all potential loss on account of swells and spoiled goods.

The canning interests oppose this plan on the ground that it means a loss to them of approximately $2,000,000 per year, and they demand more satisfactory proof of spoilage than the mere declaration of the wholesalers that such is the average.

The situation is further complicated by the fact that fifteen states have legislation which makes the regulations of the United States department effective automatically in the state, which would prohibit intrastate shipments, and about the same number do, as a matter of course, adopt the United States regulations. The law demands that the food be summarily destroyed immediately upon inspection and its being found spoiled.

The increasing importance of rigid enforcement of the sanitary laws was stressed by Commissioner Hartman of Michigan in his address on "Protected Food Stuffs" and in the discussion which followed. Every year food officials are giving more time to the enforcement of the provision of the sanitary laws which are in force in nearly every state. Trained staffs of inspectors are being developed who are more concerned with the sanitary quality of food and with the health of those who handle it, than with technical matters relating to misbranding.

The session devoted to a discussion of the dairy developed many points of major importance, both to the milk consumer and the producer. Dr. J. A. Chesley, Executive Officer of the State Board of Health of Minnesota, introduced a new idea into food control work when he said, "To secure a sufficient supply of milk at a reasonable price is as much the duty of the health officer as to safeguard the supply."

The entire week of the convention was given up to work, although on Thursday afternoon the delegates and guests enjoyed a trip around Duluth's boulevard system which ended with a visit to H. W. Zinsmaster's Model Bread Factory.

Restaurant Association Convention

The National Restaurant Association will meet in Cincinnati October 8-13. The general subject of the first meeting will be "Service." President Harry Baldwin, who has recently returned from Europe, will talk on the subject, "Restaurant Service Here and Abroad." John Harding, known as the "Sandwich King of Chicago," and Miss Ella King of the Marshall Field's restaurant will also talk.

The general topic of the second day will be "Food," and of the third day, "The Public."

American Dietetic Association Meeting

The American Dietetic Association is holding its annual meeting at the Hotel Claypole in Indianapolis on October 15, 16 and 17. Dietitians throughout the country will assemble for a program which will stimulate interest anew in a rapidly developing profession.

The association was formed only six years ago. A group of hospital dietitians forsaw the impending development of hospital food work and felt the need of standardizing preparatory training and working conditions for the dietitian. The rapid growth of the American Dietetic Association testifies to the need it fills in the promotion of improvement in every phase of applied dietetics.

It was within the hospital that the work now allotted to the dietitian gained its first faint professional aspect. This field still offers the widest scope and breadth for dietetic activity, because it is concerned with administration, dietotherapy, education, social service, research, in short with every phase of applied dietetics. From these subdivisions of the hospital field have arisen opportunities for the dietitian interest in a more concentrated activity.

The meeting at Indianapolis is one which no dietitian can afford to miss because the program covers every phase involved in the broad field of the hospital dietitian, and in the more intensive ones of specialized dietitians.

Officers of the American Dietetic Association

President, Mrs. Octavia Hall Smillie.
Honorary President, Miss Lulu Graves, Supervisory Dietitian, Mount Sinai Hospital.
Vice-President, Miss Hallie B. Cornette, United States Public Health Service.
2nd Vice-President, Miss Effie Raitt, University of Washington.
Treasurer, Miss Anna Boller.
Secretary, Mrs. Brota Luther Grion.
Chairman on Education, Miss Effie Raitt er, University of Iowa Medical School.
Chairman on Education, Miss Effie Raitt.
Chairman on Social Service, Mrs. Gertrude Gates Mudge.
Chairman on dieto-therapy, Miss Amalia Lautz.

MONDAY — October 15th

10 A. M. Opening—Mrs. Octavia Hall Smillie, President.

Section on Administration. Speakers—Miss Effie Raitt, University of Washington, Section Chairman, "Survey of Present Status of Dietitians' Work." Miss Annie Jewett, Board of Directors American Restaurant Association, "Qualities Necessary for Success in Commercial Food Work." Miss Ruth Lusby, University of Washington, "Opportunities for the Administrative Dietitian." Discussion: "Food Service to Nurses." Leader, Miss Helen Wells, Brooklyn Hospital.

2.00 P. M. Section on Dieto-Therapy. Speakers, Mr. Russell Wilder, Mayo Clinic. "How May the Dietitian Best Cooperate with the Physician?" Dr. H. A. G. Clowes, Eli Lilly Company, "Insulin Treatment and Its Relation to Dietetic Management of Diabetes Mellitus." Miss Amalia Lautz, Dietitian, Peter Bent Brigham Hospital, Section Chairman. "The Standardization of Technical Methods Used in Dieto-Therapy."

7.00 P. M. Banquet. Speaker: Dr. Charles P. Emerson, Dean, Indiana College of Medicine.

TUESDAY — October 16th.

10.00 A. M. Section on Education. Round Table Discussion, Dr. Ruth Wheeler, University of Iowa, Leader and Section Chairman. I. Teaching Dieto-Therapy—A. By Broadcasting Methods—1. In Nephritis, May Foley, Chief Dietitian, Mayo Foundation, Rochester; 2. In Diabetes, M. E. Whittaker, Therapeutic Dietitian, University Hospital, Iowa City, Iowa. 3. In Tuberculosis B. To Individuals—1. Patients, Margaret Hoffman, Lakeside Hospital, Cleveland, Anna Boller, Chicago; 2. Doctors and Dietitians, Mutual Teaching; Insulin Study Especially, Mrs. Mary DeGarmo Bryan, Presbyterian Hospital, New York. 11. Reports of Experience with Suggested Plans for Courses—A. For Nurses, Rose Straka, Presbyterian Hospital, Chicago. B. For Student Dietitians. Reports from Various Hospitals.

2.00 P. M. Sight-seeing trips (including visit to Eli Lilly Company, manufacturers of Insulin).

8.00 P. M.—Speakers: Dr. Louis H. Burlingham, Barnes Hospital, "What Does a Hospital Superintendent Expect of a Dietitian?" Dr. Amy Daniels, University of Iowa, "How Can the Home Economics College Improve the Preparatory Training of the Hospital Dietitian?"

WEDNESDAY — October 17.

10.00 A. M. — Section on Social Service. Speakers: Mrs. Gertrude Gates Mudge, Section Chairman. "Survey of Polish Dietaries." Miss Helen Parsons, University of Wisconsin, "Special Class Problem." A Home Economist, Cleveland Associated Charities, "The Place of Home Economics in Family Case Work." Discussion—"The Dietitian and the Hospital Clinic," Miss Fairfax Froudfit, Miss Blanche Joseph, Michael Reese Hospital, Miss Martha Blyman.

2.00 P. M.—Miss Abbie Marlatt, University of Wisconsin, "Institutional Management Abroad." Business meeting. Tea.

8.00 P. M.—Miss Lydia Roberts, University of Chicago, "Recent Developments in Dietetics."

On the afternoon of October 17 a tea is to be given and Mrs. McCray, the Governor's wife, Mrs. Ralston, Mrs. Thomas Marshall, the wife of the ex-Vice President, and Mrs. Demetrius Tillotson, wife of the superintendent of the Methodist Episcopal Hospital, will be asked to serve as hostesses. Mrs. Margaret Marlowe, chief dietitian of the Minneapolis Hospital, will superintend the arrangements in this connection.

Exhibits will be displayed of food, household supplies, the latest scientific equipment, and non-commercial material. This latter to consist of charts, health posters, home economics bulletins and all magazines used in the business management of dietary departments.

The World's Dairy Congress

A meeting of peculiar and unusual interest is that of the World's Dairy Congress which will convene in Washington October 2. Delegates and visitors from thirty-seven or more foreign countries are coming, at the invitation of our State department, to study the dairy industry in our country and to compare methods and appliances with each other.

During the opening sessions at Washington on October 2 and 3, the discussions will be of the broadest international character. October 4 will be spent in Philadelphia as guests of the National Dairy Council to study the work that organization is doing to increase the use of dairy products. From October 5 to 7 the congress will meet in connection with the National Dairy Exposition at Syracuse, New York.

The program for the National Dairy Exposition gives twenty-nine sessions with two hundred papers to be presented, nearly half of them by foreign speakers who are experts in some phase of dairy work in their own lands. The subjects to be discussed will be of interest to the producers, the distributor, the manufacturer, the equipment man, and also to scientists, nutrition workers, health officials, and welfare workers. The visitors will have an opportunity to inspect American methods of farm production, and methods used in handling the raw products, and in the making of manufactured products. They will carry home the story of the excellence of American dairy machinery, and the gospel of increased consumption.

The following list of topics will be presented at the Syracuse meeting:

October 5—(1) Evaporated, condensed and dried milk in the dietary; (2) business organization; (3) cheese production; (4) extension methods in dairy education; (5) dairy publications.

October 6—(1) The nutritional value of milk; (2) ice cream problems; (3) improving and protecting the milk supply; (4) methods of dairy instruction; (5) dairy publications.

October 8—(1) Educating the public in the value of milk; (2) co-operative milk marketing; (3) control of quality in manufactured products; (4) transportation and bulk handling; (5) milk in the diet.

October 9—(1) City milk problems; (2) co-operative marketing of manufactured products; (3) butter manufacture; (4) milk secretion and the nutrition of dairy cows; (5) chemistry and bacteriology of milk.

October 10—(1) Equipment, construction and standardization; (2) condensed milk and milk products; (3) the control of the quality of milk; (4) breeding; (5) diseases of dairy cattle.

EDITORIAL

Miss Blanche Ingersoll Joins the Staff

THE AMERICAN FOOD JOURNAL takes pleasure in announcing that on September 1, Miss Blanche Ingersoll joined the staff as Assistant Editor.

Miss Ingersoll's academic background includes training both in home economics and in journalism at Lewis Institute, Chicago, Kansas State Agricultural College, Iowa State College, and Teachers College, Columbia University. She has taught food subjects in various institutions, has done editorial work for the New York State Farm Bureau of Farms and Markets, and immediately before coming to us, was Assistant Professor of Home Economics at Iowa State College.

Besides her work on The American Food Journal Miss Ingersoll will direct various educational projects for the magazine.

Harmony Between Food Manufacturers and Control Officials

IN reporting the recent convention of the Association of American Dairy, Food and Drug Officials for The American Food Journal in this issue, Dr. H. K. Barnard, a former member of the organization and a former editor of this publication, comments on the tranquility of the meeting as compared with some of those he has attended in the past. Dr. Barnard says that this convention was different, because both food manufacturers and commissioners met on a common ground, "without any of the feelings of hostility or distrust which have in years past been so prominent."

President Miller commented on the spirit of cooperation which now prevails between the food manufacturers and the food commissioners. He said that it is notable that several of the large organizations of food manufacturers have adopted codes of ethics embodying the very laws and principles which govern the manufacture, labeling and distribution of food products. "Instances can be cited," said President Miller, "in which industries have done far more to elevate the industry as a whole than could have been accomplished in a much longer time through legal authority alone."

This situation, as stated by President Miller, reflects great credit upon food manufacturers for their high-minded recognition of the standards which do and should govern the manufacture and sale of their products, and upon the food commissioners for their excellent work in helping to bring about this condition. The feeling of cooperation and understanding which now exists, promises well for the ironing out of some of the incongruities and inconsistencies in food laws which exist in large degree to the distress of all food manufacturers who are striving honestly to live up to and beyond the spirit of the law.

Food Products Institute of America Has Broad Aims

ORGANIZED a year or two ago as a New Jersey association, the Food Products Institute of America has recently sprung into a degree of prominence as a national body, and the plans it has outlined for its future activities promise to make it one of the most constructive forces for uplift in the food industry.

The officers of the Institute have divided the food industry into 21 groups, all of which, however, have some common interests, which it is the purpose of the organization to serve, just as it is the purpose of The American Food Journal to act as a coordinating influence in the things which interest and affect all branches of the food field alike.

Thirty corporations having a total of 46 manufacturing plants in 16 states are now included in the Institute's membership list, and as a national organization it is still in its infant stage, so that there is still much room for expansion. Its aim is to be the clearing house for the entire industry in matters pertaining to finance, economics, commerce and food technology. Its Advisory Council, made up of eleven names well known in the food world, is a guarantee of the sound purposes of the Institute. It has been a pleasure to the editors of The American Food Journal to assist in various ways in the promotion of some of the plans of the Institute, and this publication recommends to all food manufacturers a careful investigation of the work which the organization aims to accomplish. Full particulars may be obtained by addressing an inquiry to Dr. Frederic Dannerth, 96 Academy Street, Newark, N. J.

Fight for Legal Regulation of Self-Rising Flour Renewed

THE agitation for legislation to place the manufacture and sale of self-rising flour under the same regulation that affects other compounded food products has been renewed in some of the Southern states. Food Commissioner Battle of Texas has led the fight in his own state and there is an equally active campaign in Georgia to adopt legislation that will force manufacturers of self-rising flour to disclose its ingredients on the label.

Consumption of self-rising flour is said to be greater in the South than in any other section of the country and it is there that the trouble started more than a year ago, and it is there that legislation will probably be adopted which other states may emulate or not as they choose.

Much of the agitation has been fanned by the complaints of baking powder manufacturers that the law requires all baking powder labels to tell what the product contains, which they claim unjustly discriminates against them in favor of manufacturers of self-rising flour, which is handicapped by no such restriction.

The Texas Legislature has already passed a bill requiring all self-rising compounds to bear labels disclosing the nature and proportions of all ingredients, and limiting the amount of the leavening agent in them to a maximum of three and a half per cent. In Georgia the retail grocers' association has fathered a similar bill and has circularized its own members with this bit of startling information:

> Georgia is today the dumping ground for inferior grades of self-rising flour, and every miller within a radius of a thousand miles seems to be sending his off-grade stuff to this market. Laboratory tests have proved that many self-rising flours are unfit for human consumption. As retail grocers we are largely responsible for the health of the public. We are not merely selling agents for manufacturers and jobbers. We are purchasing agents for the consuming public and it is our duty to protect public health by supplying only good, wholesome, healthful food.

There are numbers of high-grade manufacturers of self-rising flour, whose product with or without legal regulation will be all that should be expected of it, but they should welcome the passage of laws which will bar from the market unfair and unwholesome competing products. This publication on previous occasions has advocated laws regulating the manufacture and sale of self-rising flour and it still sees no reason why those with high standards for their products should not welcome the adoption of laws which will put such high-grade products on the plane to which they belong.

FOOD AND HEALTH EDUCATION

Edited by WINIFRED STUART GIBBS
BLANCHE INGERSOLL, Assistant Editor

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"Come Out of the Classroom"

How the Various Departments of the Public School System Work Together in Teaching Home Economics Subjects

THAT the progressive teacher of domestic science is ever on her tiptoes to broaden her horizon is a truism. Elsewhere we have noted the fact that at a recent conference of supervisors from Atlantic seaboard cities the key note was "come out of the Classroom." Supervisors and teachers are constantly seeking for new points of contact and fresh ideas for socializing recitations. This is the modern interpretation of the well known principle of pedagogy, that a teacher must always know more than she teaches.

FOOD AND HEALTH EDUCATION aims to help the teacher of domestic science in various ways. It will continue to be the teacher's own open forum, offering her opportunity to relate her own successes and her own perplexities; giving her as well the benefit of the experiences of others. Beginning with the present issue its aim broadens.

The actual activities of the class room must always be the chief concern of the conscientious and ambitious teacher. We hope to bring to our readers certain definite helps toward that continuous vitalizing process which is at once, the teacher's responsibility and her inspiration.

To this end we shall publish from time to time contributions from men and women who are busy about educational activities in the health field, educators whose chosen field lies outside the class room, but whose problems are often similar to those of the teacher, in that they have to do with the human equation. In reading these contributions it is hoped that our teacher-readers may get new light on some of their difficulties, and new ideas for vitalizing their recitations.

For example, in our July issue was an account of domestic science classes for boys. Other cities beside Cleveland doubtless have such classes. Is it not reasonable to suppose that the article on the health and food work of the Boy Scouts in the present issue, will offer much that is stimulating to teachers of boys' classes? Furthermore, the general plan of operation is much the same for the Girl Scouts as for the Boys, and this means that a number of teachers who may have Girl Scouts among their students will find suggestive material in Mr. Ashley's paper.

Then, take the matter of classes in community work. Popular instruction in food and health is carried on by many organizations and through various channels. Dr. Frankel's fine paper on the co-operative project of a great life insurance company offers any number of suggestions to the wide awake teacher.

This question of co-ordination of interests between the teacher of domestic science and teachers of other subjects, is a fascinating one. We shall soon give our readers interesting articles on the relation of proper clothing to nutrition, on co-operative projects as developed by teachers of domestic science and of art and others equally important. Each article will be from an authoritative source.

Finally, this issue carries the first of a series of short articles on the place of the motion picture in domestic science education. Mr. Barrows, director of the educational division of the Bray Productions, Inc., was formerly District Representative of the University of Wisconsin Extension Division, is Secretary of the National Committee on Better Films, Director of Community Centers, New Bedford, Massachusetts, etc. He is therefore well equipped to help domestic science teachers in this important field.

Winifred Stuart Gibbs

Twenty-Five Thousand Dollars For Health Education

By Dr. LEO K. FRANKEL
The Metropolitan Life Insurance Company

WHEN an insurance company offers prizes to school teachers, one naturally wonders what reason there is for such an offer and what it signifies. Why should a corporation interest itself in health, especially in health as it is taught to pupils in the public schools? The answer is that health work pays. Back of this announcement lies an interesting story covering the experience of one company over period of more than a dozen years.

It was in 1909 that the Metropolitan began to think that an insurance company should interest itself not merely in paying death claims but in finding some way of postponing payment of such claims; that is, it began to think in terms of health and to devise ways and means of lengthening policyholders' lives. There is a long winding road from this point to the $25,000 prize offer. It leads us past visiting nurse service for sick industrial policyholders; we glimpse millions of pamphlets on health subjects sent into policyholders' homes and made available for general community health work; we come in touch with the activities of fifteen thousand agents co-operating with their local health and social groups in clean-up campaigns, health exhibits, and various health projects. Like all roads that lead into general community welfare, this one brings us finally to the public schools.

The company came to the conclusion long ago that if it is to do fully effective health work for its policyholders, it must interest itself in the health of the community. There is no greater force at work for community health today than that of the teachers in the public schools, whose influence extends not only to the children under their charge, but to the homes from which these children come. The creating of public opinion on personal and community health is to a very large extent in the hands of these teachers.

A series of conferences with the staff of the American Child Health Association led to the development of a plan for awards to teachers in the elementary schools based upon actual work in health education over the period of a school year. It was agreed that this would be an excellent method of stimulating interest not only among teachers, but in the communities where these groups of teachers were competing for the awards. Such a plan would have the triple effect of interesting the children in the school room, reaching the home and developing new methods and technique in health education.

Briefly the provisions of the plan are as follows:

Dr. Leo K. Frankel

An award of $500 is offered in each of 50 communities to the teacher who secures the best results in health teaching during the school year 1923-1924.

The awards are to be made in cities of a population of 50,000 or over where at least 20 teachers agree to compete.

Not more than two prizes are to be awarded in any one state.

In states where there are no cities of a population of 50,000 or over, cities of a population of 25,000 or over may compete.

The administration of the plan is in the hands of the American Child Health Association, who will decide to whom the awards are due.

The American Child Health Association will be assisted by a local committee in each city composed of: one member selected by the Health Commissioner, one selected by the teachers' organization, and one by the Chamber of Commerce or other civic organization.

This means that during the next school year in fifty representative cities of the United States groups of teachers varying in number from 20 to the entire teaching corps will be working intensively on the development of a health program. The results for the cause of health education are certain to be interesting.

This is not the first contact the Metropolitan has had with school teachers. Year by year, as the various health pamphlets have come into teachers' hands, an increasingly large number of them have written asking for this literature for school use. Last year nearly four thousand teachers wrote for help and over eight hundred thousand pamphlets were sent them for class room work. Letters of appreciation received from these teachers indicate that the literature has been a real help, even though it was not prepared especially for school use, but to meet the needs of policyholders.

For a number of years, district managers have worked in co-operation with city authorities in Clean-up and other campaigns. Because they realized how important it was for children to take an active part in these campaigns, the Company has offered prizes in poster contests. In other special health campaigns prizes have been offered for posters and for essays.

This particular prize offer is, therefore, only a part of a general campaign of the Metropolitan to improve health. Through a Visiting Nurse Service free bedside care is provided for sick industrial policyholders and for group certificate holders. Agents are taught to recognize in their weekly visits an opportunity to render service; booklets and circulars on the care of the child, personal hygiene and prevalent diseases have been placed in their hands for free distribution. Thousands of policyholders have learned to turn to agents for information in case of sickness, accident, or other matters touching the well-being of the family. Managers are encouraged to help in every way possible local agencies which are working in the interests of better health.

In the broader field, the company frequently finds opportunity to be of service. A tuberculosis demonstration in Framingham, Massachusetts, financed by the company and conducted by the National Tuberculosis Association has shown very satisfactory results. In one seven year period of one demonstration the mortality from this disease in Framingham has been cut in two. A demonstration in the reduction of infant mortality at Thetford Mines, Canada has resulted in two years' time in a reduction of more than 53 per cent in the infant mortality rate.

Lack of authentic information regarding the organization and practices of Municipal Health Departments in the United States induced the company to offer to finance a study of these departments.

The American Public Health Association agreed to gather and compile the data. This study has been completed. The findings are so valuable to public health workers that they have been accepted by the Surgeon General of the United States Public Health Service for publication as a Government document.

The Metropolitan organized and is financing a commission of eminent bacteriologists and sanitarians to conduct researches into the cause of and cure for influenza. As yet the influenza bacillus has not been isolated, but much has been learned about the nature and treatment of the disease.

In all health work undertaken by the Metropolitan, the aim has been to conserve the health of policyholders and of the communities in which they live, and through experiment and demonstration to point the way to better health and longer life. The results of these efforts are highly gratifying. In 1922, 52,000 fewer industrial policyholders died than would have died under the death rate of 1911—the first year for which mortality statistics comparable with later years were compiled by the company. The death rate of Metropolitan industrial policyholders is declining more rapidly than that of the general population of the United States. The improvement of the company's mortality in 1921 over 1911, in excess of the improvement in the registration area at the comparable ages, one to seventy-four, for the same years, means a net saving of 20,000 lives. Good health pays!

In entering the field of health education through the schools by the granting of scholarships to teachers, it is hoped to raise the health standards and practices of school children, and through them the health standards and practices in the homes. When the teachers of the country realize that by teaching health to children in the class room they are making possible a healthier and happier nation, and showing the way to strong, healthy and efficient manhood and womanhood, they will be eager to carry on the great work they have so courageously begun.

Health and Good Citizenship

How the Boy Scouts of America Teach Their Members the Principles of Physical Fitness

By W. B. ASHLEY

Editor of "Scouting," the official journal of the Boy Scouts of America

Passing the first class cooking test

A SICK man can be a good citizen, but it depends upon the character of his ailment how much of a contribution he can make to civic welfare—and that, after all, is the measure of good citizenship, the contribution in act, word and example that one makes to civic welfare. Now, the whole purpose of the Boy Scout movement is to produce men of character trained for citizenship. Sound personal health is at the very nerve center of its program of activities. So it will be interesting to observe how this great movement with its varied round of outdoor, and some indoor, leisure-time activities for boys handles the fundamental subject of personal health, and, at the same time, builds up in the coming citizen the right attitude of mind toward public health.

Do not let it be supposed that any boy is debarred from Boy Scout membership on the ground of ill health. There are scout troops in institutions for the tubercular; many excellent troops are composed entirely of blind boys and of boys who are deaf and dumb; there are crippled boys who are making good in troops of sound boys; and there are actually bedridden Boy Scouts who are doing the best they can to keep up with their fellow-scouts. That some boys are so placed that they can never qualify as 100 per cent sound physically, does not—in the belief of the Boy Scouts of America—rob them of the right to be classified as good citizens.

Physical Fitness Required

But physical fitness within his capacity is required of a scout and before he becomes a member of the Boy Scouts of America the boy must promise: "On my honor I will do my best to do my duty to God and my country, and to obey the scout law; to help other people at all times; to keep myself physically strong, mentally awake, and morally straight." This scout oath is kept in mind by reaffirmations in troop meetings and on special occasions, and the Constitution of the Boy Scouts of America requires that on the evening of every February 8th, the birthday of the movement, every scout and official shall make formal reaffirmation of the oath—a promise not, as you will note to do what may sometimes prove impossible, but to do one's best to do the things stated.

The Scout Law referred to in the promise consists of twelve points, as follows: A scout is trustworthy; loyal; helpful; friendly; courteous; kind; obedient; cheerful; thrifty; brave; clean; reverent. There is no such thing as a boy living up to this oath and law who is not doing his level best to keep in good health. He would fall down on the cheerful requirement, the requirements to be brave and clean, the necessity to be trustworthy — in fact he would fail at every one of the points if he were not first of all keeping himself in as good health as is possible for him.

The tests by which a boy passes from tenderfoot rank to second class, then to first class scout, call for knowledge gained by experience in things of the outdoors. They call for knowledge in such matters as first aid to the injured, and signalling, which require steady nerves and clear minds, or in other words, sound health. The tests include a 14-mile trip in the open, alone or with another scout, followed by a satisfactory account of the trip; the ability to prepare a fire in the open, and then to properly prepare such nutritious foods as eggs, bacon, meats, fish and vegetables. To advance beyond the rank of first class scout to that of life scout, then to star, and finally to eagle scout — the highest in the movement, the first class scout must qualify for various merit badges by tests in practical vocational subjects which include personal health and public health.

In qualifying to pass these various tests the scouts "learn by doing." They gain health by doing healthful things. They learn the importance of health and the relation of food to health by definite study of health conditions, both personal and public, and by engaging in practices that have as their objects the prevention of unhealthful conditions and the achievement of 100 per cent good health — personal and public.

The Scout's equipment is very simple

It is practicable to do no more in this article than to state the tests prescribed for the merit badges in personal health and public health, which are as follows:

Personal Health

To obtain a merit badge for Personal Health, a scout must:

1. Write a statement on the care of the teeth, and show that his teeth are in good condition as a result of proper care.
2. State a principle to govern in eating; and state in the order of their importance five rules to govern the care of his health.
3. Present satisfactory evidence that he has not been absent from school or work for a period of at least six months as a result of his failure to observe these rules.
4. Tell the difference in effect of a cold bath and a hot bath.
5. Describe the effect of alcohol and tobacco on the growing boy.
6. Tell how to care for the feet on a march.
7. Describe a good healthful game and state its merits.
8. Describe the effects of walking as an exercise.
9. Tell the dangers of specialization and overtraining in the various forms of athletics, and the advantages of an all-around development.

Public Health

To obtain a merit badge for Public Health, a scout must:

1. State the chief causes and modes of transmission of each of the following diseases: tuberculosis, typhoid, malaria.
2. Draw a diagram showing how the housefly carries disease.
3. Tell what should be done to a house which has been occupied by a person who has had a contagious disease.
4. Describe the method used in his community in disposing of garbage.
5. Tell how a city should protect its milk, meat, and exposed foods. State what are the laws in his community covering this subject, and to what extent they are being enforced.
6. Tell how to plan the sanitary care of a camp.
7. State the reason why school children should undergo a medical examination.
8. Tell how he may cooperate with the health authorities in preventing disease.
9. Produce saisfactory evidence that he has rendered service in some effort recommended by the public health authorities in the interest of public health.

Cleanliness Is Health Insurance

A scout learns from the start that cleanliness is the first step toward healthfulness. He learns this by unmistakable methods. He must undergo inspection of his personal appearance and equipment, and suffer the humiliation of rebuke if he presents himself for some troop or patrol activity in untidy condition and with a mussy food supply. In tent life, at camp, or on the hike, he must keep his bedding and his space in the tent in good order. He must have a place for everything, and everything there. In a tent of from six to eight boys, each scout is on his mettle to be blameless for any disorder that the keen eye of the camp director may detect in his morning inspection. This same rule of cleanliness applies to the scout's care of his mess kit and cooking utensils. It follows him on his duties as a member of the Kitchen Police crew, responsible for the condition of the mess room and kitchen, tableware and cooking utensils, and for the condition of the ground surrounding the mess hall. So the Boy Scout starts off with his right foot on the road to good health by the scouting program.

Boy Scouts As Pest Fighters

A second fundamental to good health is, of course, the prevention of causes of bad health. Whether or not the scout is inclined to earn the merit badge in personal health or public health he is an inveterate pest-hound. Fly-swatting campaigns, mosquito exterminating raids, clean-up campaigns, good health surveys — these are activities in which every scout participates as the opportunity offers; and the opportunity offers right along. The scout goes into these campaigns with a definite conception of the underlying reasons for them. He knows the dangers to personal and public health, the health of the members of his family and of his schoolmates, and of his town, resulting from unsanitary conditions. He learns by such experiences that eternal vigilance is the price of community good health, and when he becomes a responsible citizen he will be a champion of health.

What a Boy Scout Eats to Keep Him Healthy

In the official pamphlet "Camp Health, Safety and Sanitation," prepared by the Department of Camping of the Boy Scouts of America, this statement occurs, "Physicians are becoming more and more convinced that the best defense against the attacks of disease and contagions of all kinds is the maintenance of a vigorous, healthy body. . . Among the factors which govern the health of boy campers and in which precaution will protect against health hazards are: food, water, light, air, exercise, rest, sleep, morale and discipline. The food should be sufficient, digestible, appetizing, and properly balanced. . . The water should be free from harmful germs and other forms of contamination and pollution. . ."

In accordance with this principle, Boy Scouts are trained in the art of keeping their camp menu simple and of good quality. They are not allowed —where proper leadership is exercised —to take any old thing to eat that they want to on the hike or at camp. Where they purchase foodstuffs ready to eat, they must be of reliable brands. Canned beans and canned soups are favorite articles. The scout must know how to prepare these canned goods with his camp cooking utensils over his campfire, so that they lose none of their food value nor any of their tastiness. Dehydrated vegetables and fruits, bacon, cured meats are recommended to scouts. This is chiefly because such things are comparatively easy to carry and to prepare for the meal. Canned milk is part of the scout's bill of fare, unless he is to camp where fresh milk, as well as fresh vegetables and fruit may be procured. In such case, he is taught to buy only as needed in order to avoid danger from flies, over-ripening and decay.

Where the thing is properly done, scouts, in passing their tests for advancement from tenderfoot to first class rank, learn how to select good meats and vegetables and how to cook them so as to retain all their food values, including that essential of food value, palatableness. Anyone who has eaten a well-prepared hunter's stew in a Boy Scout camp has acquired a standard of excellence for that particular dish, which he will insist upon forever after when calling for hunter's stew. The preparation of fish, fowl and game for the table; baking pancakes, biscuit, hard-tack or twist with camp cooking utensils; making cocoa and chocolate, are included in the culinary training of the boy scout.

The scout learns by experience at camp—because a scout is trained to be observant—what constitutes a healthful diet for three meals a day. This sort of thing has been carefully worked out by trained dietitians for the camping authorities of the Boy Scouts of America, and in the effort of scout officials to standardize the Boy Scout camp the commissary department has the first place. Scientifically prepared menus covering a week at camp are made available to leaders. These tables were prepared with a view to wise economy in cost as well as to maximum body-building and health insurance food values. One such menu is given here for the information of readers.

BREAKFAST

One medium bowl cereal (cooked or uncooked); 1 cup beverage, preferably milk or cocoa; 2 slices bread; 1-25 lb. butter; 1 egg or equivalent.

LUNCH

One medium bowl soup or serving of baked beans or equivalent; 4 slices bread; 2 spoons apple butter or jam or 1 serving of pudding or stewed fruit.

SUPPER OR DINNER

One-eighth lb. smoked or fresh meat; 1 medium potato or equivalent (rice spaghetti, etc.); 2 slices bread; 1-25 lb. butter; 1 dish stewed or fresh fruit; 1 cup beverage.

Cooks vs. Doctors

The following hints passed out to scouts by the local scout officials at Buffalo, N. Y., are typical examples of the common sense advice which is given to Boy Scouts by their leaders along this line:

"A couple of tomatoes sliced in your hunter's stew will greatly improve its flavor and consistency. A small handful of rice or barley may also be added for variety of flavor to advantage. A good cook never uses beets in a stew, for besides having a strong, rather coarse taste which will overcome the other ingredients, they give the stew a muddy pinkish color which makes an unpleasant looking concoction."

"When frying eggs or potatoes be sure you have enough grease to last until their cooking is completed. But if you have been frying bacon, there will probably be too much grease, and some should be taken out before putting in your eggs or potatoes. Greasy food is indigestible, and too little grease means burnt food. After a few hikes one will have no trouble in judging the correct amount."

"Remember that most food does not need a roaring fire to be well cooked. A slow cooking over a hot bed of coals will produce a much more appetizing meal."

In practically all large camps for Boy Scouts a canteen is conducted so that boys may purchase sweets, and as a rule there is a definite limit placed on the quantity that the boy is permitted to purchase in any one day, as a safeguard against over-indulgence. No other confectionery is allowed in these camps, for the regulation of the scout's diet—the recognized relation between his food and his health—is a fundamental principle in the standardized Boy Scout Camp.

Good Food and Plenty of It

In the official handbook issued to Scoutmasters, considerable attention is given to food supply on hikes and in camp, and fundamental principles of dietetics are laid down. A table of 100 rations is given; food for one man 100 days, 3 meals a day, or for 33 men (32 boys and 1 Scoutmaster — which comprises the standard troop. The Scoutmaster is informed that each article of food is measured as though it were used exclusively, so as to assure its maximum food value to the boy. If fresh meat and cured meat are used at different times, only proportionate amounts of each will be required in the menu; the same being true in case of canned, fresh or dried fruits, etc.

Scoutmaster examines "rookies"

This standard list is as follows:

Article	Unit	Daily 100 rations (3 meals ea.)
Fresh meat, including fish and poultry,	lbs.	100
Cured meat, canned meat, or cheese,	lbs.	50
Lard	lbs.	15
Flour, bread or crackers	lbs.	85
Cornmeal, cereals, macaroni, sago, cornstarch	lbs.	15
Baking powder or yeast cakes	lbs.	5
Sugar, sirup or strained honey	lbs.	40
Molasses	gallons	1
Chocolate or cocoa	lbs.	2
Milk, condensed	cans	40
Butter	lbs.	10
Dried fruit	lbs.	20
Rice and beans	lbs.	20
Potatoes or other fresh vegetables,	lbs.	100
Canned vegetables or fruit	cans	30
Salt	lbs.	4
Spices	ozs.	4
Flavoring extracts	ozs.	4
Pepper or mustard	ozs.	8
Pickles	qts.	3
Vinegar	qts.	1
Soap		
Matches		

One of the great values of the Boy Scout program is found in the inevitable tendency of scouts to carry into their homes the practices instilled by their scout life. There is no question but that this tendency results in improved methods of buying and preparing the food for the family table in many thousands of homes where once there was thoughtlessness, indifference, or even ignorance on this subject. In this way, the Boy Scout becomes a missionary of good health to his own immediate family, and it is conceivable that from his home there radiates throughout the entire family circle these simple fundamental principles of good health learned at the scout camp and on the hike.

Reader's Comment on "Food and Health Education"

FOOD AND HEALTH EDUCATION has received numerous appreciative comments from readers, of which the following is an example:

"This September we are starting a course in nutrition and open-air school work in the State Normal School at Cortland, N. Y. Our aim is to prepare nutrition and health teachers. I shall recommend that all members of my classes subscribe to FOOD AND HEALTH EDUCATION. This supplement is ideal for our work." Lillian Bussy, Head of Nutrition Department, Normal School, Cortland, N. Y.

Domestic Science in the Movies

By EDWARD M. BARROWS

Director of Social and Educational Service, Bray Productions Inc.

"WHAT impressed me most"—it was a domestic science teacher reviewing the N. E. A. convention at Oakland—"was the extent to which the schools are using motion pictures. You could sit all day in the American Visual Instruction exhibit and just watch educational films; no two on the same subject and all good basic material for teaching."

New as they are, it is doubtful if any innovation has made so profound an impression upon pedagogical methods as have motion pictures in the past five years. Cheaply and effectively they reach all sorts of minds, at all sorts of distances from the teaching centers, combining the museum and the laboratory in the fixation of definite ideas through intensive methods. Psychologists explain that this is because the eye can take in several objects at once, enabling us to grasp immediately the relations between things, hence, the underlying principles. In reading the printed page, the eye is only substituting for the ear, which can receive only one sensory impression at a time and must rely on memory for correlation of ideas.

For domestic science teaching, which is above all things concrete and objective, the motion picture has infinite possibilities. Yet these possibilities have scarcely begun to be realized, partly because teachers tend to go their own ways in spite of innovations, and partly because of the basis of motion picture production. An adventure in pedagogy has a new idea. Without any guarantee of its acceptance, this idea is broadcast in books or lectures to the whole field of learning involved, so that anyone may utilize it at will. Very few motion pictures are produced in any such speculative fashion. They are made upon a definite order from a purchaser or group of purchasers, and then adapted to meet the needs of the whole field of knowledge which that order represents. Producers rarely risk their money upon an intangible general interest, no matter how pronounced that interest may be. This has the effect of making the supply of domestic science subjects grow very slowly, but it also gives the assurance that such pictures are of known and demonstrated worth.

Today domestic science pictures come from three sources. A university or school system will produce a film to fit into its own curriculum; then if this film is successful, it finds a market through the educational exchanges always on the lookout for such material. Secondly, a social service organization, or a state or government department, will have a film made as a part of its own general propaganda. These will be produced by their creators themselves and they are apt to be loaned, not rented, since only educational exchanges which can afford a certain amount of free distribution will find it expedient to handle them. Finally, magazines which specialize in home and domestic science topics have sponsored many excellent films which are generally handled either by the producing companies which made the films, or by their exchanges.

Edward M. Barrows

With the source of good domestic science films so diverse and so little understood, it is no wonder that this branch of visual instruction has been so little developed. Yet the value of these films has been amply proven in schools and colleges all over the country. The need of a central source of information has become pronounced, for the question in many a school is not, "shall we use films," but, "where can we get them."

The source of supply is, however, the first and most important matter to teachers. The next issue will list some of the leading educational exchanges in all parts of the country which can supply valuable material. In the meantime, inquiries concerning suitable motion picture material or where to find specific films, will be gladly answered if accompanied by a self-addressed envelope.

American Home Economics Association Meeting

The sixteenth annual meeting of the American Home Economics Association was held at the University of Chicago, July 30 to August 4. The association was welcomed by Dr. Ernest Dewitt Burton, president of Chicago University, at the first general session held in Mendel Hall. Some educational relationships in home economics were discussed at this same meeting by Alice F. Blood, president of the Association, Juliet Lita Bane, the new executive secretary, Peter A. Mortenson, superintendent of the Chicago Public Schools, and Charles H. Judd, of Chicago University.

"How Can Every Home Economics Teacher Be Further Aroused to the Supreme Importance of National Interest in Home Economics," was the subject for a round table discussion led by Miss Emeline Whitcomb of the United States Bureau of Education.

At the meeting of the Institutional Home Economics section, different phases of institutional training were discussed. Mr. Ernest J. Stevens, vice-president of the La Salle Hotel Company, presented the commercial aspect, showing that home economics training is not sufficient for hotel positions. One university—Cornell—has introduced a four years' course in hotel training.

The time element in home making was the topic around which all discussion in the Homemakers' section was centered. Practical suggestions from the experience of successful homemakers, offered many good ideas regarding the working out of a time schedule.

Samuel S. Wyer of Smithsonian Institute, gave some extremely valuable information concerning the present fuel supply, and the urgent need for conservation. Conservation must be secured by legislation, and the right kind of legislation can be secured only through proper education of the public. In this respect the fuel situation becomes a vital part of home economics.

Several hundred women—and a few men—were introduced at the meeting of the Home Economics in Business Committee. The many kinds of commercial organizations in which home economics women are working indicated the interesting way in which home economics has become generally accepted.

Dean Anna E. Richardson of Iowa State College, in her discussion of "How and Why Home Economics Needs the Business World," regretted the fact that consumption has not been studied to the same extent as production and transportation.

In addition to the regular sessions, many sections held luncheon meetings, and the convention closed with a general dinner meeting at which the subject of "Child Care and Child Training" was discussed by several speakers.

Practical Cookery Lessons in High School

By EUGENIA WILSON

Acting Head, Department of Home Economics, Technical High School, Springfield

1. Vegetable Cookery

TECHNICAL High School features vegetable cookery. The girls are taught to preserve the largest amount of mineral content by cooking the vegetables without water, by baking or steaming; in small and large amounts of water, saving the vegetable stock procured as the foundation for nutritious cream soups. Carrots, spinach, asparagus, peas, beans and squash provide such stock.

2. Large Quantity Canning

In canning and preserving vegetables and fruits the girls have an unusual opportunity to do large quantity cookery by securing orders from members of the faculty. These orders are placed early so that lessons may be properly planned. The recipes vary each season, because orders vary. The variety is interesting and includes various combinations of such products as pepper relish, mock mince meat, green tomato pickle, canned cooked tomatoes, ripe tomato pickle, canned whole tomatoes, asparagus, pears, pineapple, sweet pickled pears, red pepper jam, amber marmalade, crab apple and quince jelly. During the season when citrus fruits are cheapest, the girls make marmalade for sale. The open kettle and the cold pack methods are used, so that students become familiar with both processes. Here, too, the manipulation and care of the pressure cooker are studied.

3. Practical Test on Batters and Dough

Batters and doughs are taught in succession. Students work toward a standard product for each type. After each group of lessons a practical examination proves the ability of each girl to reproduce without direction standard muffins or cake or biscuits or pastry. The test is conducted as follows: a numbered paper is given to each girl, on which is written amounts and combinations of ingredients. For example,

1¼ tbs. Crisco
¼ c. sugar
2 tbs. milk
½ egg
3-8 cup flour
½ ts. baking powder
A few grains salt

The pupil studies it silently, decides on type, names it, states her reasons, and states method of preparation. Having recorded this material she passes the report back to the teacher and then prepares the food without any communication with fellow students or consultation with the teacher. The test is rated on the following points:

1. Correct name, method of preparation.
2. Orderly desk during entire process.
3. Proper order in mixing ingredients and competent handling of problem, good judgment in regulating ovens.
4. The product as a standard of its type.
5. Personal appearance of student.
   a. Clean outfit.
   b. Clean hands and nails.
   c. Tidy hair.

4. Testing Ovens

A successful method of testing ovens is as follows: students are taught to place a dry hand in the oven and to count slowly one hundred and one, one hundred and two, and so on up to one hundred and eight for a very hot oven; one hundred and ten for a hot oven; one hundred and fourteen for a medium oven; one hundred and eighteen to twenty for a slow oven. The classes have so much practice in baking in the portable oven that they soon become capable of regulating alone any gas oven by the use of this scale, which is practical for the average housewife.

5. Bread-Making under Home Conditions

Several lessons are assigned to bread and rolls. Pupils are given the advantage of large quantity cookery, in that each girl makes one full-sized loaf. The project method is used, and the girls are assigned extra afternoon time for the purpose of calculating the amount of ingredients for two classes, for measuring and mixing the ingredients in the large bread mixers and setting up for over-night rising. Next day each girl kneads and molds her own loaf, then groups of girls, in turn, supervise baking.

6. Housekeeper's Duties

For the housekeeper's duties lists are posted on the bulletin board at least three months ahead in table form. There are assigned, for each day, five housekeepers and two alternates, the latter to take care of the duties of absent housekeepers. The girls are held responsible for looking at the list when entering the class and checking the assigned duty, carrying it out as an actual task, and having it inspected at the close of the period.

7. The Bungalow

In addition to the laboratory work mentioned, where classes of twenty-four work, second-year classes are limited to ten so that they may work in a delightful practice house, a real five-room bungalow located in the school yard.

The history of this house is most interesting because the plans were designed by girls in school, and the house built by the boys with the exception of laying the chimney and fireplace. Much of the furniture was made by "Tech" boys, and tiles in the fireplace, candlesticks, and vases by girls in classes in pottery; the hangings were stencilled and made up by the girls, as also the table linen and bed-covers as a part of their training in household decoration. Later when the hangings were not in keeping with new wall paper and fresh white paint, the girls dyed the hangings to make the desired color scheme. The fire irons were made in the forge shop by the boys.

The living room opens into a central reception hall in which is the fireplace, then the dining room opens from that. On the other side of the house are the bedroom, bathroom, small hall, kitchen and pantry, all being acceessible from either living or dining room, so that there is a complete unit in which to live and work.

The classes cooking in the bungalow learn to calculate the cost and nutritive value of meals. One day they plan a menu, collect recipes needed, and the staff is appointed by the teacher for the following day. The workers take the positions in rotation, acting as hostess, cook, waitress, housekeeper, and assistants. After the cook is designated, she divides the food preparation among all pupils except the waitress and housekeeper who need full time for putting rooms in order, laundering table linen, cleaning silver, and setting the dining table. The cook must present at the opening of the second lesson a time slip giving in detail:

1. Time each recipe should be started.
2. When each will be ready to serve.
3. When the meal should be served.
4. When meal should be over.
5. At what time work will be completed and the house left in good order.

As the actual results are tabulated in her book, the cook can tell whether her original estimate was a keen one or not, and whether it can be improved upon at another lesson. After several breakfasts, the girls serve simple luncheons and dinners, then formal luncheon and formal dinner, also a reception or tea. Guests from the faculty may be asked once a month, two at a time. The girls show marked improvement in operation in this course, developing poise and graciousness of manner, becoming efficient and

AMERICA'S MOST FAMOUS DESSERT
JELL-O
TRADE MARK REG. U.S. PAT. OFF.
A MIXTURE
SPECIAL PACKAGE
NET WEIGHT 26 OZS.
MAKES FOUR QUARTS
RASPBERRY
PURE FRUIT FLAVOR
VEGETABLE COLOR
This package makes four quarts of Jell-O. Serves forty to fifty persons according to size of portion.
Dissolve the contents of the package in four quarts of boiling water and set in a cold place to harden.
If only part of the contents is to be made up at one time, allow exactly one pint of boiling water for each 3¼ ounces (92 grams) of powder.
Further directions of great importance are given on each of the two side panels of this package. Be sure to read them.
THE GENESEE PURE FOOD COMPANY
LE ROY, N.Y.
Be sure to use boiling water to dissolve the Jell-O.
The time required for cooling may be shortened by using half the quantity of boiling water for dissolving the Jell-O and then adding enough cold water to make the full quantity required according to paragraph above. See that the powder is all dissolved in the boiling water before adding the cold water.
Read directions on the opposite panel for whipping Jell-O.

Half the charm of "home cooking" is in a simple delicious dessert like Jell-O. Many a wise chef has found that out. And so we've made an Institutional Size package—the same famous and favorite Jell-O in a giant box, for greater convenience and economy in hotel, restaurant, cafeteria, hospital and other large-order kitchens.

self-reliant executives of the household tasks.

8. Social Functions

There are during the school year several occasions at which the girls can extend their hospitality. Numerous clothing and millinery exhibits offer a splendid opportunity to serve tea and cakes, or punch and wafers, also to meet socially the guests of the school. Some classes entertain their mothers and fathers informally in the bungalow. One of the most unique events is the reception which the graduating girls hold in the bungalow for their mothers, older friends, and faculty, wearing their graduation dresses which have been made in the clothing class. The junior girls serve refreshments for the party, also help entertain the guests.

9. Nutrition

Food chemistry and nutrition are studied during the senior year. The latter course is based on all previous work. It includes special study of the foodstuffs, vitamins, and the planning of diets, first for the baby, then for the child of 2 to 4, 4 to 8, 8 to 15, for a mature person, then the individual in old age. One hundred calorie portions of foods are weighed and measured, and diet charts are kept. Digestive enzymes and their action are studied in detail, also the value of fruits and vegetables in the diet. The effect of high protein diet is worked out, and what happens in the process of metabolism in the body, tieing this to the problem of diet for increasing or decreasing body weight. Special diets, as for instance, for constipation, for diabetes, for contagious diseases, and simple invalid diet are studied briefly. The pupils check up their personal habits in the free use of fruits and vegetables, and try to improve their entire diet, so that it is normal, and suited to their individual calorie requirements.

10. Openings for our graduates

The girls graduating from this school are sought as student dietitians in hospitals of the highest standing and for the training schools for nurses. Many girls go on to technical colleges or normal schools to become teachers of home economics, whereas some go directly into tea rooms or institutions as assistants. Graduates are capable of supervising the selection, cooking, and serving of food for the family in a thoroughly scientific way. Although students are trained for vocations, our primary aim is to teach them first of all to live their lives intelligently and wisely as the proper foundation for successful business, professional or home careers.

Puzzles for Pleasure and Profit

By RUTH STRANG

New York City Schools

THERE is a story about a visitor to New York City who was taken to a theatre by a friend. They rushed from a local to an express, changed at the next station for another local, and reached the theatre five minutes before the beginning of the performance.

"Why didn't you stay on the local for the whole distance?" asked the visitor, curiously.

"Oh, you see we saved three minutes," explained his friend.

"But," inquired the other, "what did we save them for?"

Perhaps some of the girls in Home Economics classes who finish their assignments quickly and efficiently also wonder what they saved the time for, if there is nothing for them to do but to waste the time waiting for the slower girls to finish.

There have been many fine ways worked out by the Home Economics teachers of utilizing these few odd minutes of leisure time. Some teachers have on hand magazines and books to read, class scrap books and posters to make, doilies and other articles to sew, and games to play. These are all good, but may take more time than is usually available.

A few food and health puzzles, each written on a separate card, take but a few minutes to solve and appeal to some children immensely. One psychologist calls the age of twelve years "the puzzle age," and among some of the children there does seem to be something instinctively satisfying in the occupation of solving puzzles.

The following puzzles are not merely mechanical. As they are worded, they involve a brief review of food and health facts, a testing of various possible solutions, and a good deal of satisfaction when the right words are discovered — a satisfaction that may possibly accompany those ideas when they are again recalled in another connection.

Here are a few favorite puzzles with all the detailed explanation that would appear on the card. The cards may be attractively illustrated if one has time to do it.

1. Below are some things important for making a healthy boy or girl. Can you supply the missing letters?

F O — —
— L E E —
S U — L I — — T
E — E — — I — E
— A T E —
R — G — L — R — T —

2. Would you like to know approximately how many ounces a twelve-year-old girl should gain each month? Alice has written down all the letters but she has not put them together correctly. See if you can find out the number.

Wetvel

3. S T
P O T
P
P
E
W
R
S

The first and second lines are complete. You are to finish the other five words for which you have only the last letter, in such a way, that you will have in the two columns the name of two vegetables we should use often.

4. moat paid slick like

If you remove one letter from each word there will be a complete word left.

The letters you remove, in the order of the words will spell the name of our most important food.

5. This is what Angelina always chooses for her lunch:

1. Picture of a bottle of milk—no change.
2. Break—change one letter.
3. Button—change two letters.
4. Frill—change two letters.
or
Venerable—change two letters.

Note—To make this more difficult, pictures may be used instead of the words—a person breaking a stick for break, a button, a piece of frill, and a venerable old man for the last.

("Front" instead of "Frill" is a little easier to guess.)

6. Here are the most important sources of the "A" vitamin. The letters are in order, but joined together in a mixed up way. How long will it take you to make the correct list?

But term I lkeg G. Y. O. Lkcod live roilth in gre en lea fve get able. S.

7. Fill in the spaces horizontally with four words of three letters each.

There's a great many letters lacking here, isn't there? Well without the two foods which you will find on the last two lines when you have filled in the empty spaces, good teeth and strong bones are likely to be lacking; for on these last two lines are the names of two of the best sources of vitamin C.

— — O
— — E
— — N
— — D
T G —
O E R

Answers to Puzzles

1. Food, Sleep, Sunlight, Exercise, Water, Regularity.
2. Twelve.
3. Spinach, Tomatoes.
4. Milk.
5. Milk, Bread, Butter, Fruit, or Vegetables.
6. Butter, milk, egg yolk, cod liver oil, thin leaf vegetables.
7. Orange, Tomato.

Experiments in Cookery

By RUTH W. SYKES

Instructor, High School of Commerce, Springfield

THE term, "experiments in cookery," sounds a bit formidable for high school classes, but it should be interpreted from a practical point of view rather than from an absolutely scientific one. In our course in foods, we found that we could get much better work from the girls by using this experimental method. The students felt a much greater responsibility in their problems and hence the results were much more satisfactory.

To give a concrete illustration of this method, we took a standard graham muffin recipe. We used both sweet and sour milk, varied the proportions of graham and white flours, baking powder and egg. To explain the variations more fully, the accompanying table will help:

Graham Muffins

I	II	III	IV	V
1 egg	—*	—	—	None
2 tb. brown sugar	—	—	3 tb.	—
1 c. graham flour	—	1¼ c.	1 c.	—
1¼ c. white flour	—	1 c.	1¼ c.	—
½ tsp. salt	—	—	—	—
4 tsp. B. P.	3 tsp. B.P.	4½ tsp. B.P.	2½ tsp. B. P.	5 tsp. B.P.
		[illegible]	½ tsp. B. S.	2/3 tsp. B.S.
1 c. sweet milk	—	—	1¼ c. sour milk	1-1/3 c. sour milk
3 tb. melted fat	—	—	2 tb. melted fat	—

---

* The same as in I

The girls learned to standardize their manipulations and to eliminate unnecessary utensils no matter which recipe was used. We cut the amount of equipment necessary for mixing the muffins to one bowl, one teaspoon, one tablespoon, one measuring cup, one case knife, an egg beater, and a flour sifter.

Then the girls were divided into squads of five, each girl in the group using a different recipe. At the end of the lesson, they brought their muffins to the instructor's desk, each squad having five variations of muffins. Of course, there were several sets of muffins made according to the same recipe. These were grouped together and then each group criticized and compared with the other groups. This made the results much more interesting and the comparisons much more valuable.

We then discussed the quality of the muffins, looking for uniformity not only in each lot of muffins made according to the same recipe but also for the muffins as a whole. The results were quite surprising to the class, for the good muffins, no matter which recipe was used, were practically the same in appearance and taste. The girls rated their muffins by the following score card and were exceedingly critical in their rating:

Score Card for Rating Muffins

Flavor	35
Lightness	20
Grain and texture	15
Baking (crust and color)	15
Appearance (shape and size)	15
Total	100

The class learned many things from this experiment. They quickly learned to adjust recipes requiring sweet or sour milk, to interchange baking soda and powder and to vary the amounts of leavening agent necessary for a flour mixture. They could take a recipe and tell whether the proportions were correct, and if not correct them. They discovered that most of their failures were due to inaccuracy in measuring ingredients or due to carelessness in oven regulation or lack of judgment. Their results were much more convincing than any criticisms from the instructor.

The student also discovered the advantages of sour milk. Most of them were very greatly prejudiced against its use. This very amusing incident happened in connection with this problem is really worth repeating. Two or three of the girls were so positive that they could tell a sour milk product that the instructor put this proposition to them: At the end of each day for several days, she selected two lots of muffins—one made with sour milk and the other with sweet milk, the muffins being practically identical in all ways. The girls there attempted to judge and select "which was which." It was really guesswork and the girls finally had to admit that their notions and prejudice were unreasonable; they really could not decide. In most cases, if there was any superiority in appearance or taste it was in favor of the sour milk product.

The effects of this type of work upon the class were very beneficial and stimulating. The girls really enjoyed it and they certainly felt a keener responsibility for their results.

Help Stamp Out This Fearful Menace

If malnutrition were an infectious disease the health authorities would have to close almost every school in the country. For more than 6,000,000 children of school age in the United States—about one third of the total school population—are suffering from the evil effects of undernourishment.

These underfed, malnourished children are in every school. Some of them are probably sitting in *your* classroom. They are the listless, indifferent pupils, lacking in attention and concentration, who retard the progress of the whole class and make teaching so difficult.

Begin The New School Year With This Resolve

Unless you as a teacher will help, this evil can never be wiped out. By enlisting in the fight against malnutrition you will greatly simplify your problem of managing backward children and at the same time you will have done inestimable good to the children themselves, their parents and the community as a whole.

Start now at the beginning of a *new year* to combat this dangerous condition which is handicapping the health and mental development of our school children. The Nutrition Department of the Borden Company will be glad to help you by supplying you, free of charge, with literature on malnutrition and its treatment. It will also advise you exactly how to organize and conduct health and nutrition classes in your school. This material is based on scientific study and experimentation carried on during the past year among several hundred malnourished children.

The results show conclusively that malnutrition *can* be overcome or prevented by correct feeding and a proper observance of certain health rules. They also prove that Borden's Eagle Brand Condensed Milk, which was included in the regular daily diet of these undernourished children, is extremely valuable in building up weight and restoring energy.

For Eagle Brand, made of pure cow's milk and cane sugar, supplies certain vital food elements which are necessary for physical and mental activity.

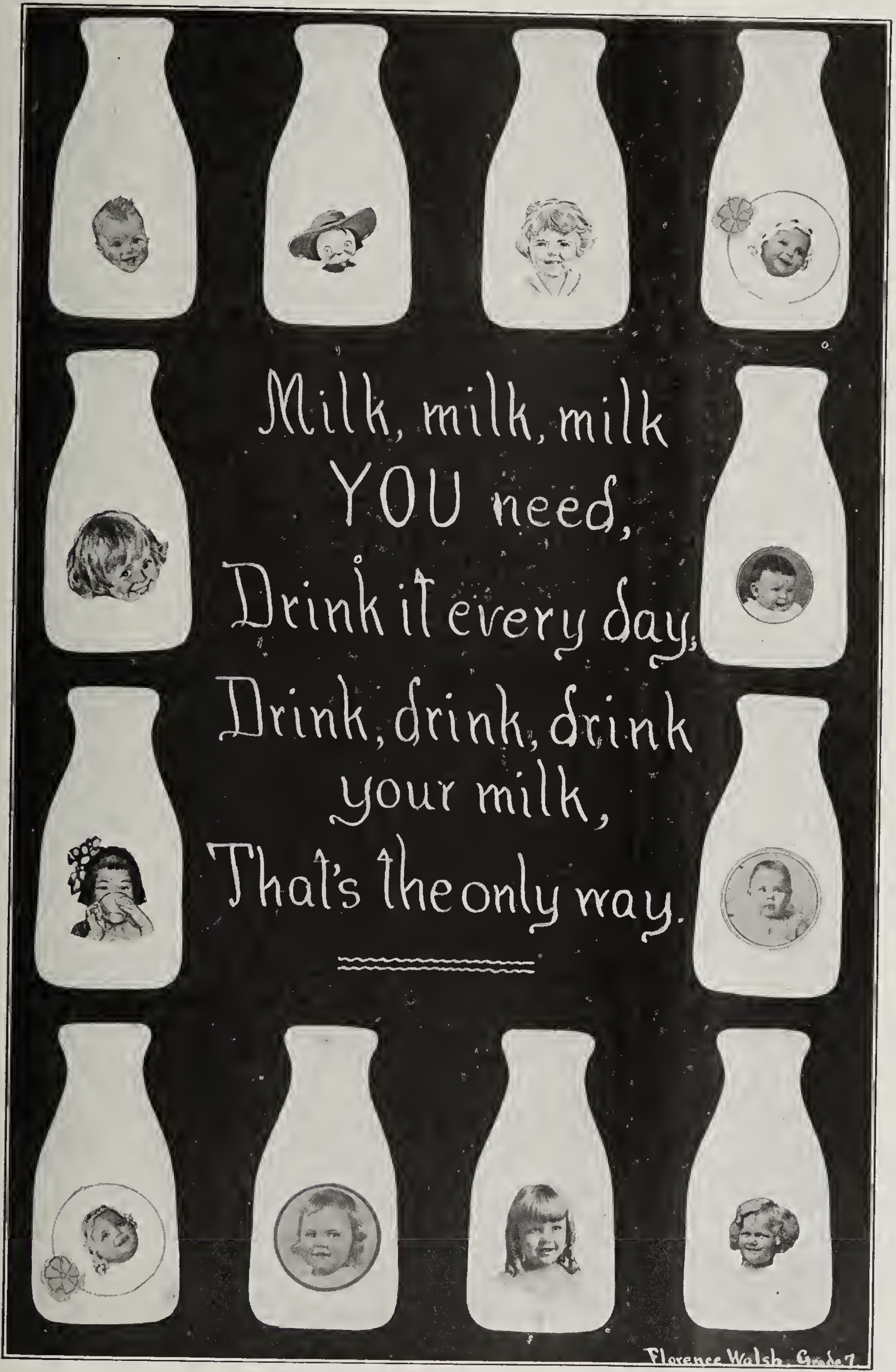
The same methods which the Borden Company's nutrition experts employed in fighting malnutrition can be applied to *your* classes with equal benefit. If you are interested in joining the nation wide campaign against malnutrition, write to the Nutrition Department of the Borden Company, for the literature listed below.

The Borden Company,
Borden Bldg., New York, N. Y.
Please send me the literature checked.
....20 Suggestive Lessons for Nutrition Classes
....An interesting Experiment with Malnourished Children
....Keeping Your Child Fit
....The Adolescent Girl
....Menus for Little People
....Johnnie's Adventures with the Milkarpies
....The First Milkarpies
....Height and Weight Charts
....Health Records.

Name____________________
Address

A Valuable Poster Service

The value of posters in teaching health subjects is quite generally recognized. However, some teachers have difficulty in securing effective posters—effective in that they stress health rather than poster making. To assist such teachers, the American Child Health Association has issued a leaflet giving an outline for health poster making in schools, with good suggestions for conducting poster contests.



In order to further assist the teacher in securing ideas, they offer to loan a set of eight posters made in different styles and illustrating various health habits. The posters may be kept one month—not with the idea that they are to be copied, but that they may serve as a stimulus, and interest the children in what children have done in other parts of the country. In return they ask that eight original posters made in that school be sent to the association.

The poster illustrated was contributed by Miss Jessie Ferguson, Supervisor of Home Economics, Ridgefield Park, New Jersey.

Do You Know

that Royal Baking Powder is made from Cream of Tartar derived from grapes?

Make your next cake wholesome, healthful, delicious, by using

ROYAL Baking Powder

Absolutely Pure

NO ALUM

NO BITTER TASTE

The Remarkable Health Value of Sparkling Gelatine

Everybody knows that desserts and salads made with Knox Sparkling Gelatine are good to eat and attractive to serve. Now science, after an exhaustive investigation, tells us that they are of remarkable health value as well — and physicians and dietitians understand that Knox Sparkling Gelatine has a powerful colloidal action which aids digestion and that it is abundant in lysine, the amino acid so important to healthful growth.

KNOX
SPARKLING
GELATINE

should therefore be an important element in every day's menus. One of many beneficial ways to serve it is in this delightful and easily prepared dessert:

Butter Scotch Rice Surprise

1 envelope Knox Sparkling Gelatine
1-3 cup rice
2 tablespoonfuls butter
3 cups milk
1 cup brown sugar

Wash the rice and cook it until nearly tender in a double boiler with two cups milk scalded and ¼ teaspoonful salt. Meanwhile, cook together in a shallow pan one cup brown sugar and two tablespoonfuls butter until it gets very dark brown but not burnt. Add this to the rice and milk and finish cooking until the rice is tender and the caramel melted. Soak the gelatine in ½ cup cold water ten minutes and dissolve it in one cup hot milk. Strain this into the cooked rice mixture and turn into a cold wet mold.

Important Books — FREE
For all who are interested in "Eating for Health"

A digest of the scientific investigation of the Health Value of Knox Sparkling Gelatine together with Mrs. Knox's books of recipes for all kinds of healthful and delightful dishes, will be sent free on receipt of 4 cents to cover postage.

The Charles B. Knox Gelatine Co.
111 Knox Ave., Johnstown, New York
"Always the Highest Quality"

Plain for general use. The original unflavored, unsweetened package.

The "Busy Housekeeper's" package. Contains Lemon Flavoring in separate envelope. No Lemons required

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Books For The Domestic Science Teacher

Include With Your Subscription an Order for One or More of These Books

THE BOSTON COOKING SCHOOL COOK BOOK
By Fannie Merritt Farmer. Price $2.50
(New Edition, Revised and Enlarged)
An authoritative guide to the study and practice of cookery. The material is so well organized and the recipes so accurate that the teacher of cookery may use the book as the very foundation stone of her library.

MARKETING AND HOUSEWORK MANUAL
By S. Agnes Donham. Price $2.00
The author's unusual breadth of experience as one of the house directors of the Garland School gives her just the right background for the preparation of a handbook that is entirely practical and suggestive.

FEEDING THE FAMILY
By Mary Swartz Rose, Ph.D. Price $2.40
Professor Rose's book has stood the test of several years' service. The subject matter is based on sound scientific knowledge, the treatment is entirely informal and popular. Teachers of foods will find it invaluable in planning diets for family use.

FOODS AND HOUSEHOLD MANAGEMENT
By Helen Kinne and Anna B. Cooley. $1.40
A clearly written discussion of the relation of foods to the economics of the household. Of interest to all teachers.

PRINCIPLES OF HUMAN NUTRITION
By Whitman H. Jordan. Price $2.50
One of the best of the shorter books on nutrition. Enriched with many helpful tables of food values, thus appealing to the teacher who builds her professional library slowly.

RECIPES FOR INSTITUTION USE
Compiled by Chicago Dietetic Assn. $1.60
A collection, each recipe of which is vouched for by a well known dietitian. Teachers interested in the underlying principles that govern quantity cooking know this book.

HOME ECONOMICS IN THE ELEMENTARY AND SECONDARY SCHOOLS
By Agnes K. Hanna. Price $2.50
A text book for students in special methods courses in colleges and normal schools. The use of specific problems for which students see the need is the basis of the book.

THE ENCYCLOPEDIA OF FOOD
Price $10.00
Stories of the foods by which we live, how and where they grow and are marketed. Their comparative values and how best to use and enjoy them.

FOOD AND HEALTH EDUCATION
37 West 39th Street New York

The Hotel Dietitian, Her Status, Her Work, and Her Problems

By LOUISE A. WILLY

IT is less than five years since a large commercial hotel first employed a dietitian to supervise the meals of its several hundred employes. A few hotels have established dietetic departments as a special "service" accommodation for guests, but these departments are publicity features rather than revenue producers. The dietitian has supervised the children's dining room in family hotels, but the hotel child is seldom found in sufficient numbers to demand a special department for his needs. She has definitely established a place for herself in resort hotels where there is sufficiently large percentage of interested patrons to warrant the innovation.

The feeding of employees was for years a side issue. They were fed, to a considerable extent, with the surplus from the guests' dining room. The office staff and department heads ate in the main dining room, the others from tables placed in the kitchen after meal hours. With the growth of the business the number of employees increased, the proprietor became aware of the expense, and the employees became more particular.

Then entered a regime in which separate dining rooms were established, and special food purchased. It was found that the cooks did not take an interest in preparing food for other employees, so a separate kitchen was put in, and special cooks engaged.

There were still problems. Employees are critical, and a discontented employee means a greater labor turnover. There was the idea that food was not up to standard. There was the element of sameness — the same type of food day after day, or the same menu on recurring days of the week. Sometimes good food was served in such a hit or miss fashion that it became unappetizing. There was class distinction. The second officers and the kitchen help, for instance, were accustomed to different type of food and manner of eating. Some employees were termed heavy eaters, others were not, and so on.

Then it was that the dietitian was employed. Her work was to serve nourishing food, properly prepared, in variety and quantity to satisfy. She had to make changes slowly. She had to consider the work, manual or mental, of the people she fed, their nationality and their customs. She discovered traditions were easier built up than broken down. If she found a greater proportion of meat served than necessary she had to substitute vegetables gradually.

An interesting experiment was tried in a hotel where many Spanish, Italian, Scandinavian, Irish, Russian, and Cuban people were employed. The dietitian inaugurated a system of serving dishes suited to a specified nationality at one meal a week. She discovered that while each race preferred its own particular dishes, it objected to the food of other foreigners, and American edibles were gladly accepted as a compromise.

In this hotel seven hundred employees were served. To take care of those who came on and off duty in different shifts, it was necessary to serve five meals in eighteen hours—breakfast, lunch, dinner, nine o'clock supper, and midnight lunch, a total of over two thousand meals a day served in four dining rooms. The points of discrimination in this case are rather difficult to define. The breakfasts were practically identical. For lunch and dinner the officers had choice of two meat dishes, and an extra vegetable. The big problem was evidently service. The officers were given table service; the others cafeteria.

For these meals four barrels of potatoes, 60-70 pounds of butter, 110 gallons of milk, 300 pounds of beef, and other food in proportion was required. The cost of food, preparation and service, averaged $600 a day.

The foregoing applies only to hotels that furnish meals to employees, and not all of these eat in the house. In some hotels all employees eat out. In others they have the privilege of eating out or of buying their meals in dining halls especially operated by the hotel for their convenience. Under these conditions the employees have choice of dishes, as in commercial cafeteria, except that the food is usually served at cost, consequently less expensive for them. The employees to whom meals are served customarily have their salary based on this fact.

In the commercial hotel "a la carte" restaurant management by a person skilled in feeding the general public is more necessary than special training as a dietitian. Only a small proportion of restaurant diners give thought to the balanced ration, and this proportion is sufficiently interested to choose what it desires from the dishes printed on the large bill of fare.

By far the greater majority of patrons eat according to taste, purse, or desire; or because the restaurant or locality is famed for a certain dish, as lobster in New York City, terrapin and canvassback duck in Baltimore, red snapper in Mobile, crayfish and gumbo in New Orleans, sandab in California, et cetera. They may be dining out, or entertaining friends. They are in the hotel for a short time, often solely for pleasure, and eating out is an event with them. They desire a change from home. They do not care to be reminded of diets. Food of good quality and cleanly service are the principal demands. There is also the indifferent diner, who gives no thought to his meals.

In the large pleasure and health resort hotels, the conditions are different. The guests are largely people of wealth, many of them on a diet, often under physician's orders; some on strict, others on light diet; many on "grow thin" regime, and still others, who affect diets as a fad. Those on strict diet usually have their meals served in rooms; others eat in the main dining room, having previously arranged with the waiter to call for their trays at the diet kitchen, thereby freeing them of the task of ordering, yet enabling them to eat with their fellows in the dining room with assurance of desired food served in an inconspicuous manner.

The prescription the patron hands the dietitian—through the hotel office or personally, as may be the custom of that particular resort—may read, for example:

Protein	90
Fat	130
Carbohydrate	40
	1650 calories

indicating the number of grams of each substance he is allowed daily.

The chart shows how the dietitian has translated this prescription into three meals, morning, noon, and night. The totals of the protein, fat, and carbohydrate columns—88.35, 129, and 39—show how closely she has attained her result.

A.M.				
Orange juice	70	.....	.....	8.40
Eggs	(2)	15.00	11.00	.....
Bacon	30	3.00	20.10	.....
Lister biscuit	1	7.00	3.00	.....
Butter	10	.....	8.50	.....
Cream, 20 per cent	40	1.20	8.20	2.00
		26.20	50.80	10.40
Noon				
Broth		.....	.....	.....
Broiled Chicken	100	13.00	1.00	.....
Butter	10	.....	8.50	.....
Asparagus	200	4.00	.....	6.00
Celery Hearts	70	.70	.....	2.10
Onions	100	1.00	.....	5.00
Lister biscuit	1	7.00	3.00	.....
Butter	20	.....	17.00	.....
Cream, 20 per cent	40	1.20	8.20	2.00
Coffee				
		26.90	37.70	15.10
P.M.				
Tenderloin	100	24.00	20.00	.....
Butter	10	.....	8.50	.....
Lister biscuit	1	7.00	3.00	.....
Butter	10	.....	8.50	.....
Spinach	100	2.00	.....	3.00
Tomato	150	1.50	.....	6.00
Carrot	50	.75	.....	4.50
		35.25	40.00	13.50
Totals for the day		88.36	129.00	39.00

In other cases, the patron may hand the dietitian a list of the food he is allowed to eat, and she uses her discretion in arranging his meals. The diet following is for diabetes, which diet, together with the "grow fat" and "grow thin" prescriptions, and diets suitable for heart and rheumatic troubles, are the ones most called for:

Soups—All stock soups and bouillons.

Meats—Meats (except internal organs such as liver and sweetbreads), poultry, and fish of all kinds (not prepared with flour), may be used in comparatively small amounts.

Eggs in any form.

Vegetables—Asparagus, artichokes, cauliflower, cabbage, brussels sprouts, onions, young green beans, tomatoes, celery, lettuce, watercress, endive, chicory, spinach, pickles, olives, mushrooms, eggplant, swiss chard (either leaves or stalks).

Fruit—Gooseberries, rhubarb, grapefruit.

Nuts of all kinds except chestnuts.

Bread—Bran muffins.

Desserts—Gelatin (sweetened with saccharin), custards made of cream and sweetened with saccharin, clotted cream, ice cream sweetened with saccharin.

Cheese—All kinds used abundantly.

Beverages—Tea, coffee, lemonade.

The diet kitchen, often a small room off the main kitchen is equipped with a special board or rack for diet lists, and these lists are checked off as served, whether sent to rooms, or called for by waiter and carried to dining room. The waiter, or waitress, who serves a special diet in the main dining room has the tray checked by the dietitian. In one hotel all meals served to rooms are checked out of the diet kitchen, as it was found that this simplified keeping track of all room service charges. A small bain marie in the diet kitchen is useful for cooking a variety of small quantity vegetables and cereals for special diet needs that may not be on the regular bill of fare. It is necessary to have on hand a large stock of the various dietetic breads.

I asked a dietitian who has had experience in both hospital and resort hotel which position she preferred. She replied,

"The hospital dietitian has a greater chance to study, to further her professional skill, to supervise diets for more varied and particular cases. The resort dietitian has a chance to meet more people. She calls on guests to see if room service is satisfactory. She meets the guests who have diet meals served in the main dining room. The hotel working hours are shorter. The hospital life is more secluded."

Each dietitian has her own problems. She must be tactful, use discretion, be able to coordinate with steward and chef, and secure their cooperation. She must give up some of her most cherished opinions. She must adjust herself to the whims of the general public. Her hotel field is very new as yet, but as she gains the confidence of her employers her scope will grow. It is up to her.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **"Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition articles on hygiene suitable for supplementary reading, etc.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5 **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better with Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

Editor's note: Booklet Number 20, as listed in Food and Health Education for April, 1923, under the title "Bee Brand Manual of Cookery" is distributed at a cost of 50 cents per copy. We have been asked, however, to announce that the company publishing the book will be happy to make a special price for domestic science teachers of 25 cents per copy. The recipes includ specialties of Southern cooks and have all been tested by a graduate of Cornell University.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."** A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for left-overs and plain desserts. A valuable pamphlet on the use of gelatine.

29. **"Bread and ——."** An illustrated booklet, describing the manufacture of oleomargarine, together with recipes and directions for preparing attractive dishes in which the product may be used.

30. **"One Dish Hot Meals For Rural Schools."** Carefully tested recipes prepared by the domestic science director of a large packing company.

31. **"A Six Weeks' Sequence In School Lunches, Suitable for Schools of 100 to 300 Pupils."** Well organized material on the development of a series of school lunches. Menus and recipes.

32. **"Educational Meat Charts."** Colored charts of convenient size, with a side of beef, lamb, etc., pictured entire, with the different cuts shown graphically, both singly and in relation to the animal.

33. **"Coffee From Tree to Cup."** A series of illustrated cards forming an educational exhibit. Price 50 cents.

34. **"Medal Cook Book."** A carefully prepared cook book, giving directions for all the standard cookery processes with special attention to those dishes requiring flour mixtures.

35. **"Height and Weight Tables For Boys and Girls."** Arranged from Dr. Woods' tables. Cards giving normal weights for both boys and girls. Published by Food and Health Education of The American Food Journal.

36. **"The Dietetic Advantage of a Digestible Cooking Fat."** A 2,000-word lesson paper prepared by an expert for a large food products company, with comparisons of various fats as to melting point, digestibility and food value. Good supplementary reading for the class room.

37. **"Meat Price Chart."** A standard-size wall chart, printed in colors. Shows graphically the various cuts of meat both in relation to the animal and separately. Brings out relation of supply to demand in fixing values. Graphic representation of dishes prepared from the different cuts.

38. **"About Canned Corn," "About Custard Pumpkin," "About Canned Peas."** Three booklets containing tested recipes and interesting facts on commercial canning processes. The recipes are so arranged as to fit conveniently into a standard-size recipe file. The information concerning canning processes is of value for class room instruction in food economics.

39. **"The Children's Party Book."** A twenty-five-page pamphlet, illustrated in color. Gives outlines of games for 10 holidays: Christmas, St. Patrick's Day, New Year's, etc., with suggestions for refreshments, recipes for fancy cakes, etc. Issued by the educational department of a large baking powder company.

40. **"Nationally Known Recipes,"** a fifty-page booklet showing how powdered milk may be used in soups, fish, sauces, salad dressings, breads, and candies. More than 30 organizations, manufacturers, educators and magazine editors cooperated in the making of the booklet.

41. **"To the Teacher."** Booklet showing how to visualize to classes facts about powdered milk. An educational wall chart showing process of manufacture of powdered milk will also be sent free to teachers.

42. **"Surprise Recipes."** A collection of recipes featuring powdered lemon juice (not lemon extract), printed in convenient form for use in a recipe-filing cabinet.

43. **"To the Teachers of Home Economics and Dietetics."** A booklet showing the place of powdered milk in bread making.

44. **"Lamb — Eat It Often."** A recipe booklet issued by a large packing house with many suggestions for preparation and serving of lamb.

45. **"Wheat and Flour Primer."** An illustrated pamphlet on wheat and flour manufacture issued by a large milling company. Suitable for supplementary reading in schools.

46. **"Cold Storage."** A leaflet issued by well known meat packers showing uses and economics of refrigeration

47. **"Gems from Mammy's Southern Kitchen."** A pamphlet with 100 tested recipes, menus and food tables, featuring rolled oats.

48. **"The Story of the Bath."** A thirty-page pamphlet published at the suggestion of school superintendents, by a large soap manufacturing company. Of interest to teachers of food and health showing the relation of personal cleanliness to proper nutrition and bodily integrity.

49. **"Cream of Tartar Baking Powder."** Large wall chart, showing graphically the composition of this class of baking powder.

50. **"A Cook Book in Yiddish,"** featuring baking powder.

51. **"Ways to Save Eggs."** A cook book featuring baking powder.

52. **"Temperature Guide."** Accurate tabulation of proper temperatures for different cookery processes.

KLIM POWDERED WHOLE MILK

May be reconstituted to liquid milk in sixty seconds!

ALWAYS Place the Powder ON TOP of the Water

KLIM powdered whole milk contains 28% butterfat, or 3% more than *one-fourth* butterfat. If this powder is placed in a mixing receptacle and *cold* water poured *on it*—the butterfat hardens and it is difficult to beat into a smooth solution quickly. If, however, you will follow the directions on the can label—or on page 8 of "NATIONALLY KNOWN RECIPES" placing the powder *on top* of the water, you may time yourself and you will see that you can *beat* (not stir) Klim into MILK IN A MINUTE

May we assist you in visualizing the spray process of powdering milk—by sending one of our wall charts for classroom use? There is no charge to Home Economics Teachers. The coupon is for your convenience in requisitioning this material.

THE DIRECTOR
Department of Dietetics and Cookery
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Director, Dept. Dietetics and Cookery F.J.1
MERRELL-SOULE CO., SYRACUSE, N. Y.
Please send me free wall chart, showing production of powdered milk, and any literature which will be helpful in the classroom.
Name ....
Address ....
School ....

53. **"The School Lunch Box."** Illustrated leaflet giving attractive recipes.

54. **"Baking Powders, Classification and Ingredients"** Leaflet giving much scientific information on the composition of baking powders.

55. **"New Cook Book."** A new edition of a practical recipe book put out by a baking powder company.

56. **"Johnnie's Adventures With the Milkarpies"** Charmingly written booklet featuring value of milk.

57. **"An Interesting Experiment With Malnourished Children."** Reprint, showing good results of nutrition work on part of large condensed milk company.

58. **"Keeping Your Child Fit."** Menus for Little People, and the Adolescent Girl. Three pamphlets published by condensed milk company. Very attractively printed.

70. **"The Little Gingerbread Man," "Cakes for Delicious Desserts," "Camp Cookery."** The first booklet is attractively illustrated in color, with rhymes and recipes for pastries. The other booklet and folder give recipes for the amateur cook and professional. Valuable for home or school use. Issued by a large baking powder company.

71. **"Pure Rich Milk Made More Digestible," "Milk for the Baby," "Pure Whole Milk—Concentrated," "Germ-Free Milk for Infants," "Safe, Wholesome Food for Every Member of the Family," "Milk at its Best for Everybody," "How Evaporated Milk Is Prepared," "Recipes."** Six pamphlets and three cards. Showing prophylactic methods employed in the preparation of concentrated milk, recipes for its use, and a formula for the household. Also a cut-out illustrating in color the use of evaporated milk for picnic lunches.

72. **"The Facts About Vitovim Bread," "The Startling Story of the Super Loaf."** Two interestingly written pamphlets on the value of vitamins in the diet and their incorporation in bread. Issued by a large baking company.

73. **"Across Seven Seas," "About Tapioca."** Two illustrated leaflets and a colorful chart setting forth the history, cultivation and value of tapioca, directions for its use and well arranged recipes.

74. **"Recipes for Making Perfect Jams, Jellies and Marmalades," "Jams Made from Fresh Fruit," "Ann Proctor's Jam and Jelly Bulletin," "A Sight-Seeing Trip."** A bulletin and three folders dealing comprehensively with a process for making fruit syrups "jell," outlining the actual experiences of experts.

75. **"Modern Methods of Cooking," "Baking Powder Recipes," "Cake Recipes," "A Complete Cook Book."** The latter merits its name and should prove useful both in the school and the home. The three folders give general information regarding the use of baking powder, tables of proportions and recipes. All are written in a clear and instructive manner. Issued by the home economics department of a large baking powder company.

76. **"The Little Red Devil Recipes," "Simplifry Codfish Cakes."** A booklet and one page leaflet. The former gives appetizing recipes for the use of deviled ham and tongue, the origin and value of such products. The latter pictures "ready to cook" codfish cakes as an available dish.

77. **"The Story of a Prize Cup of Coffee."** An illustrated fairy story in booklet form, all about a king who, next to his beautiful daughter, loved a good cup of coffee. An appealing object lesson demonstrating the value of a self sealing wax paper as a coffee carton.

78. **"A Wholesome Tonic."** A folder illustrating the use of an acid phosphate both as a flavoring for cooling drinks and a tonic. Recipes are given. A pleasant way of adding phosphates to the diet. Published by a large baking powder company.

79. **"Made Dishes, Salads and Savories," "Cream Salad Mustard."** Several folders and two leaflets telling all about mustard, with comprehensive recipes. Useful for picnic parties and the home.

80. **"A Calendar of Dinners," "The Whys of Cooking," "Balanced Daily Diet," "Recipes for Everyday."** Four books by domestic science authorities giving well planned recipes and valuable material dealing with diet needs. A cooking fat is recommended for general use, and its food qualities demonstrated.

81. **"New and Delicious Ways of Preparing Pork and Beans," "About Peanuts and Peanut Butter," "About Macaroni."** Ten folders and a series of bulletins showing sanitary methods of preparing these and other products. Recipes and menus are supplied, pictured in color, and efficient ways of cooking and serving are stressed. General information is also given in regard to the derivation of these foods and their place in the diet. A series of exhibits shows some of the steps in the manufacture of peanut butter and macaroni, as follows: Spanish Peanuts; Virginia Peanuts; Stones Sorted from Peanuts; Outer Skin of Peanuts Removed; Acrid Hearts Removed from Peanuts; Peanut Butter; Durum Wheat Semolina used in the manufacture of Macaroni Products; Carton in Which Macaroni is Finally Packed.

Disappointment-Proof

By availing yourself of the Fleischmann No-Dough-Time Process, you are safe-guarding yourself against all disappointing results in your Bread.

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FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Adviser. Dr. W. W. Skinner. Bureau of Chemistry, U. S. Dept. of Agriculture.

Principles to be Observed in Standardizing Foodstuffs

By DR. W. W. SKINNER
United States Bureau of Chemistry

INTELLIGENT and effective enforcement of any law which regulates the character of articles of commerce requires the formulation of definite standards. The necessity for standards is conceded everywhere in that portion of the business world which has to do with barter in commodities, even where there is no legal regulation, and thus we find that most of the business of this kind is conducted upon well recognized specifications, either implied or legally formulated into contracts.

Without some authoritative control, either by legal enactment or self-imposed through a guild or trade organization, competition tends to reduce commercial ethics to the level of the business standards of the meanest competitor. This not only results in fraud and injury to the consumer, but it produces unfair competition for the better element in any industry, the element which is ever worthily striving to produce a quality product.

Many industries have profited by self-imposed standards or specifications, and their patrons, the consuming public have likewise profited by such self-imposed standards. It has, however, come to be well recognized that in large and diversified business operations, such as the production and sale of food, the production and sale of drugs, and the production and sale of clothing—to cite but a few of the many which could be mentioned—proper legal regulation is desirable and necessary from the standpoint of both producer and consumer.

Organization for Protection

Proper and intelligent regulation permits the consumer to exercise an intelligent choice in the selection of a commodity by requiring the label to tell the truth, and proper legal regulation protects honest business from dishonest competition by this same token. So well has this been recognized by the several branches of the food industry that it has been the rule rather than the exception, even in the absence of legislation, to organize for protection, and these organizations have initiated or have exerted a marked effect upon regulatory legislation.

One of the early laws of this character passed by many of the States was at the instance of the National Confectioners Association, and this was before the enactment of the more comprehensive Federal and State food laws. It was initiated and advocated by confectioners to curb the growing use of poisonous colors, such as lead chromate, and of inert minerals, such as terra alba and talc, in candy. The more intelligent confectioners recognized that legal protection of the integrity of their products would benefit the industry by protecting the health and maintaining the good will of their patrons. Similar legislative reforms have resulted from action taken by the milling industry, cheese makers, and others.

Immediately upon the passage of food laws, or any regulatory laws for that matter, officials charged with the enforcement and manufacturers subject to the provisions of the law are confronted with the question of interpretation. The need for authoritative definitions of articles and the determination of the limits of normal composition are at once apparent; otherwise there can be no common understanding of the intent of the law or uniformity of action by State or Federal officials. Standards, therefore, would necessarily be developed.

In the absence of some official machinery created for the purpose, however, standards would be developed gradually and laboriously by precedent, by official fiat, or by specific legal enactment. It would lead me too far astray from my present purpose to discuss in detail the development of standards by each of these processes and the comparative merit of each. For the present it will suffice to assert that for the purpose of an intelligent and effective enforcement of food laws, a standard or specification for the product to be considered is the fundamental starting point in a determination of whether the product conforms to the provisions of the law. However, I believe that a misconception of what a standard is or ought to be prevails. This is because the word "standard" is an unfortunate one for our purpose, since the older and more common use of the word cannotes superiority or a special mark of excellence. Thus, for instance, a standard meter stick or a standard pound weight indicates a unit of measure of unusual precision or accuracy. A standard for a food product has a different significance. It indicates a limit or a point from which to measure; it is a zero point, as it were, above which products are acceptable if considering desirable constituents, and below which they are to be rejected. Thus it is that a product which complies with a specification may be very far short of a really excellent or superior product—indeed, as judged by popular conception, it may be a rather inferior product, yet comply with the standard specifications.

Standard for Milk Bread

The recently issued and much discussed standard for milk bread well illustrates this point. The Joint Committee, after considering the bread schedule for more than two years, concluded that bread made from a dough in which one-third of the usual quantity of water had been replaced by milk was entitled to be designated milk bread. I am not, I hope, violating any confidence when I express the opinion that probably every member of the committee personally prefers bread with a higher content of milk solids than is represented by the use of one-third milk, and will welcome the opportunity to change the standard to include an additional quantity of milk, when the trade practice has been so improved as to make such a standard feasible. In the time alloted me I cannot attempt even a summary of the evidence which led the committee by a unanimous vote to define milk bread as noted above. The evidence convinced the committee that a consumer would have no reason to feel deceived or defrauded if sold, as milk bread, a product which conformed to these specifications.

Read before Institute of Margarin Manufacturers, Atlantic City, N. J.

Standards or definitely formulated specifications are so essential that they would of necessity be created were there no specific organization provided under the administration of food laws for the purpose. Such an organization or court has been provided and is now known as the Joint Committee on Definitions and Standards. About two decades ago, it became apparent to those who were giving thoughtful considerations to such matters that if food products were to be standardized, that is, if products were to be actually what they seemed, it was necessary for somebody, somewhere, to formulate some units of measure and to set up somewhere some administrative machinery to make such units effective.

Naturally those who took the leading part in the development of the idea were the leading food chemists, food technologists, and dietitians of the country, and with them were associated a few food manufacturers of broad experience and clear vision, and a few legislators thoroughly imbued with the spirit of service and a clear conception of the needs of the time.

The production of food is the one essential and by far the most important element in any and all systems of agriculture. The chemical composition and nutritive value of foods are important factors in this most important element of agriculture. It was logical therefore, for the Bureau of Chemistry of the United States Department of Agriculture to interest itself in this problem of foods and food standards. Consequently we find in the development of the so-called "pure food" idea that as early as 1887 the Bureau of Chemistry began the publication of accurate and comprehensive data on the composition of manufactured foods, the avowed purpose of which was to obtain scientific data upon which to establish units of measure of quality, that is, to formulate definitions and standards.

It was this pioneer work of the Bureau of Chemistry which instigated the work undertaken by the Association of Official Agricultural Chemists looking toward proper and equitable definitions for food products. In 1897, nine years before the passage of the Federal Food and Drugs Act, the Association of Official Agricultural Chemists adopted a resolution appointing a committee to formulate standards for food products to be used as a guide to secure closer agreement in the expert interpretation of food analysis and to serve as a more perfect basis of comparison.

First Committee on Standards

The first committee on standards was composed of Dr. H. W. Wiley, Chief of the Bureau of Chemistry, Dr. William Frear, of the Pennsylvania State Department of Agriculture, Dr. E. H. Jenkins, of the Connecticut Experiment Station, Prof. M. A. Scovell, of the Kentucky Experiment Station, and Dr. H. A. Weber, of the Ohio State University. Later a similar committee composed of Dr. William Frear, of Pennsylvania, R. E. Doolittle, of Michigan, A. S. Mitchell, of Wisconsin, and E. N. Eaton, of Illinois, representing the Association of American Dairy Food, and Drug Officials, was appointed to co-operate with the committee of the Association of Official Agricultural Chemists.

Later these committees were merged into what was known as the "Standards Committee," and under authority conferred by the Federal Appropriation Act of 1902, the Secretary of the United States Department of Agriculture appointed as members of the committee Messrs. Wiley, Frear, Scoville, Jenkins, and Weber, the original Association of Official Agricultural Chemists committee, and Dr. Elton Fulmer, Dr. Richard Fisher, and Dr. H. E. Barnard, to represent the Association of American Dairy, Food, and Drug Officials.

It is not my purpose to set forth a detailed history of the development of the food standards movement, but merely to give some idea of its origin to form a background, as it were, for a consideration of specific standards, and to show that the idea conceived by the leading minds interested in food matters in this country has been nurtured and developed to the present stage by others no less interested and no less sympathetic with the development of the highest type of food industry.

Much misinformation regarding the functions and the official relationship of the Committee of Definitions and Standards exists in the minds of those engaged in the manufacture of foods, and even in the minds of a few State and city food officials. A point which I should especially like to emphasize is that the Standards Committee is not a committee of the Bureau of Chemistry. The Standards Committee is a representative body composed of three delegates chosen by the Association of Official Agricultural Chemists from its membership, of three delegates chosen by the Association of American Dairy, Food and Drug Officials from its membership, and of three delegates named by the Secretary to represent the Department of Agriculture. The committee reports its findings to the respective associations and to the Secretary of Agriculture but its judgments do not become operative until issued as a food inspection decision by the Secretary of Agriculture.

So much then by way of introduction to the question which I want to ask and which I hope to answer to your satisfaction—What are the elements which determine a standard?

It will no doubt be both interesting and enlightening if I recite for you the "Principles on which the standards are based." These principles were formulated and adopted by the first standards committee, and have been very rigidly observed by subsequent committees. Announced in 1902, four years prior to the enactment of the Food and Drugs Act, they are as follows:

1—The main classes of food articles are defined before the subordinate classes are considered.

2—The names of the various substances for which standards are proposed are defined.

3—The definitions are so framed as to exclude from the articles defined substances not included in the definitions.

4—The definitions include, where possible, those qualities which make the articles described wholesome for human food.

5—A term defined in any of the several schedules has the same meaning wherever else it is used in this report.

6—The names of food products herein defined usually agree with existing American trade or manufacturing usage, but where such usage is not clearly established or where trade names confuses two or more articles for which specific designations are desirable, preference is given to one of the several trade names applied.

7—Standards are based upon data representing materials produced under American conditions and manufactured by American processes or representing such varieties of foreign articles as are chiefly imported for American use.

8—Standards fixed are such that a departure of the articles to which they apply above the maximum or below the minimum limit prescribed is evidence that such articles are of inferior or abnormal quality.

9—The limits fixed as standard are not necessarily the extremes authentically recorded for the article in question, because such extremes are commonly due to abnormal conditions of production and are usually accompanied by marks of inferiority or abnormality readily perceived by the producer or manufacturer.

Definitions Based on Facts

A careful consideration of these principles should convince any one it was not the thought of the members of the original Standards Committee, nor of the members of the committees which have followed, that to erect or create arbitrary ideals and then attempt to translate those ideals into standards was the proper function of the committee. The committee has attempted always to frame its "definitions" so as to include such facts relating to material, quality, origin, and mode of preparation as are essential to identify the food in question. These definitions may or may not be accompanied by specifications of limits of physical quality and chemical composition characteristic of the food defined.

Natural foods vary in composition with differences in season and soil and these differences may be slightly affected by the association of small quantities of foreign or undesirable substances, which it is impracticable to completely remove. Manufactured foods vary in composition with the quality and nature of the ingredients used. The specifications as to limits of physical quality and chemical composition are so drawn as to provide, if possible, for such variations as shall be commonly accepted as reasonable.

The committee does not propose to fix limits so rigid that they hamper or delay improvements in manufacture.

Rather it seeks to define or fix those characteristics or qualities of a product which a consumer may reasonably expect when he purchases an article of food. The committee may define those trade practices which have resulted in creating a commodity the characteristics or qualities of which have become by usage well known and publicly accepted. Therefore, if we should attempt to establish a standard for a product like nut margarin, we should have to know specifically about the trade practice in the production of that commodity. We should have to determine the characteristics or qualities which identify the product to the consumer.

Standards Created by Industry

From this you will understand that in a manufactured article of this kind it is the producer who is responsible for determining those characteristics upon which later the product may be defined, or upon which a standard or specification may be formulated. You in the industry really create the standard in the creation of the product, and it is good or bad standard as you will. Having fixed the character of your product in such a way as to be recognizable by the discriminating consumer, all the Standards Committee can do is to formulate the standard or fix certain limits as to composition, so that the consumer ever after may be assured that when he buys the article he gets what he believes he is paying for.

The Food Standards Committee is a court where the evidence affecting a schedule is considered and where a judgment based upon the evidence presented is rendered. It behooves the committee to get all the evidence possible which has a bearing on a particular subject, and the committee has erected the machinery for doing so. This machinery, I can say to you, is functioning with the greatest efficiency. But neither the committee nor its executives can create evidence to substantiate or controvert any particular idea. If it is a bread standard which is under consideration, all the committee can do is to go to the members of the baking industry, to the leading thinkers and operators in domestic science, and to such scientific agencies as the Baking Institute, the Mellon Institute, the Bureau of Chemistry, etc., for the evidence upon which to base a decision.

Let me repeat again, in order to emphasize what I consider the most fundamental principle which must govern the committee in fixing a standard. A standard or definition must be one which defines in terms which have the sanction of common consent and it must be supported by evidence to warrant a judgment. No member of the Standards Committee and no member of your or any other industry has a right to attempt to translate his opinion or ideal into a definition. To do so but leads to controversy and chaos.

Let me illustrate. The committee has under consideration, we may say, the broad schedule and desires to formulate a definition for rye bread. Now the question is, What is rye bread? When we go to the industry for information we find there is no complete unanimity of opinion, and the evidence shows there is no entire accord as to practice. A few both within and without the industry, maintain that a rye bread should be made from rye flour only. Others hold that a whole rye flour bread is not a generally acceptable article. The weight of the evidence before the committee clearly indicated that the general practice of bakers is now and always has been to call a product a rye bread when rye flour has been used to replace a sufficient quantity of ordinary wheat flour to give to the product a distinctive characteristic due to the content of rye flour. The evidence further showed that bakers and others generally agree that the smallest quantity of rye flour to give this desirable quality was approximately 33 per cent, and the evidence was such that the committee was warranted in proposing this standard.

Another illustration may show you a different phase of this work of standardization, and an example of a fruitful source of controversy. When the committee was considering the schedule for cocoa and chocolate products the question arose as to what is cocoa. Now, briefly, the facts are these. Chocolate originally was the product obtained by grinding the roasted and hulled cacao bean which, when combined with sugar and water or milk, produced the delightful beverage known as chocolate or dispensed as hot chocolate. But as the ground chocolate bean, technically known as chocolate liquor, is so rich in fat that it is too heavy for most stomachs, it became the practice to improve the product by pressing out a part of the fat—about 20 per cent. To this partially defatted chocolate liquor the name cocoa, or cocoa powder, was given. The fat which was passed out was a by product. Originally cocoa powder was used most largely for beverage purposes and a cocoa powder with from 25 to 30 per cent fat was found to be of the most desirable quality for the purpose. However, with the development of the ice cream industry and the soda water industry there was a greatly increased demand for cocoa powder because of its peculiar and agreeable flavor. For these purposes the fat content was of minor consideration—the flavor was the desideratum. And as an active demand had developed for the fat or cocoa butter which was originally a by-product, the industry adopted the practice of squeezing from the chocolate liquor all of the fat it was possible and profitable to remove. consequently, today we may say that, based upon relative values, the cocoa powder is the by-product.

From this brief statement I think you can see what has developed in the chocolate industry. Those engaged in making a cocoa powder primarily for beverage purposes want a high fat standard for cocoa; those making a cocoa powder primarily for flavoring purposes want a low fat standard. Under such conditions how could our committee standardize the product? After an exhaustive study of the voluminous evidence collected, the committee was forced to the conclusion that, irrespective of the original purposes for which cocoa powder was produced, the term cocoa had acquired a broader significance and had come to mean a partially defatted chocolate liquor, and could not be restricted to a product containing approximately 30 per cent fat. In order to meet the demand for a term or expression to designate a product of high quality and high fat content, intended primarily for beverage purposes, the committee has suggested the name breakfast cocoa, a term already used by many manufacturers to designate such a product.

I have mentioned this specific case of the cocoa standard to illustrate to you that while we go to the industry for a great deal of our information and evidence, it sometimes happens that the committee must sit in judgment and render a decision which involves a trade controversy. In such cases, as with any other court, we can only follow well-defined principles and render a judgment based upon the evidence before us.

To substantiate the assertion that the committee in taking cognizance of trade practice in reaching its decision is on sane ground, established by precedent of the highest authority, I have only to quote the decision of the Supreme Court of the United States in Bank of Augusta v. Earle, 13 Pet., 590, in which it was asserted that, "The court will take judicial notice of general usages of trade and commerce."

Conclusions

In the limited time assigned me, I have treated this subject of standards primarily from the standpoint of the interest of the consumer and of the industry, in maintaining the integrity of the finished product. There is another side which is of interest to you as manufacturers and to which some of you are giving attention. It is the standardization of the raw materials which enter into your product and which exert a tremendous influence upon the final quality of your product. This is, I believe, a field of opportunity for broadening the activities of the Institute in a manner which would produce tremendously profitable results. The investigations and researches into some of the more fundamental physical and chemical properties of fats and oils are well worth your con-

I am thoroughly convinced that it would be a profitable undertaking, as well as a mark of progress for the industry and for the Institute, to consider the establishment and support of a research unit of its own. Other industries have profited by so doing, and I am sure the margarin industry would profit likewise by such an undertaking.

In closing, I want to compliment you upon the work your Institute is doing. The production of the "best possible margarin" is the slogan I frequently hear from your secretary, and is an aim which if conscientiously striven for is sure to maintain the margarin industry on a par with the best American manufacture of food. The food supply of the United States is not only more nutritious, more diversified, and less adulterated than is the food supply of any other nation of the world, but as a result of standardization and efficient enforcement of regulatory laws, it is better than at any previous time in its history. If, through the activity and sympathetic co-operation of the units representing the industries, the consuming public, and regulatory officials, the same high standard can be maintained, we need have little fear but that the people of the American Nation will continue to be, as now, the best nourished people on earth.

Manufacture of Maraschino Type Cherries

By P. S. WEINER, Ch. E.

TWENTY years ago one hundred barrels of cherries in brine were imported by American firms for the manufacture of a maraschino type cherry. This year, so enormously has the industry grown, it is probable that thirty-five thousand barrels will be brought in to supply the demand of American consumers.

Only in rare instances is the domestic brand of maraschino cherry even flavored with the genuine distilled flavor made from marasco cherries grown in Dalmatia. The United States government, therefore, permits the use of the words "maraschino type" to designate the imitation of the French product. Before the days of prohibition, cherries imported from France, having a high alcoholic content, were popular in this country; but even at that time the high import duty of about 40 per cent kept the amount of the imported finished product down to a small percentage of the supply required for American consumption.

A slight modification of the manufacturing methods followed in treating the foreign fruit, would result in making from the domestic cherry a better looking "maraschino," with a considerably better taste, than that made from the Italian cherry. At present, however, the American yield supplies a very small part of the demand for maraschino cherries. Western canners utilize entirely the abundant yield of the west coast. American consumption therefore is dependent upon the "maraschino type" which is manufactured from the fruit imported from the great cherry centers of Italy—Mattelone, Genoa, Sempirderema, Leghorn, Barre, Naples and small farming villages along the Adriatic.

Quality and Size of Cherries

There are great differences in the quality of this imported fruit, and American buyers find it necessary to take into consideration the following important factors in making their selection: the cherries should be of the free stone variety, fairly evenly graded; they should be of the small variety, and not the dwarfed large fruit—that is, small fruit picked unripe, with large pits; the color of the cherries should be fairly even, with the shape fairly round, unblemished by sun spots.

Cherries are bought primarily on size, with specifications designated by milimeters. There are at present four standard sizes:

1. Dipping—10-14 MM
2. Small—14-18 MM
3. Medium—18-22 MM
4. Large—22-26 MM

Italian exporters designate their broken, spotted and waste cherries as "Scarto." One of the largest importers in this country has the heads of barrels in which Scarto cherries are shipped to him painted black, barrels of small cherries painted red, medium cherries painted green, and the large fruit designated by yellow.

The imported fruit is bought on the basis of from 130 to 140 kilos in ordinary barrels, and sometimes as high as 168 in casks. In a barrel of 130 kilos, 286 pounds of cherries with their stems were shipped from their starting point in Italy. This does not mean, however, that 286 pounds of cherries are received in this country. There is the element of shrinkage to be taken into consideration. The purchaser must assume a shrinkage loss of 10 per cent, and he will be rebated for any loss exceeding that by the importer.

The weighing is done by licensed weigh masters under the supervision of the Customs weigh masters, and is based upon the weight obtained from 10 per cent of the importation of any one shipment. The shrinkage of newly imported fruit, if such fruit is of prime quality, should not exceed 7½ per cent and buyers are advised to look askance at newly imported fruit on which the shrinkage is more than 10 per cent. While fruit purchased within the year that it is packed should not have lost in shrinkage more than that amount, the shrinkage will become a trifle greater each month as the fruit stands in warehouses.

Loss From Pitting

After being taken from the brine and sulphurous acid the cherries are thoroughly washed and stemmed. They are then run through a quadruple plate sorter and graded into barrels before going to the pitters. At present there is no machine which successfully pits cherries, leaving only one hole. Most of the types used drive the pit through, leaving two openings. Pitting is usually done by hand on a piece-work basis, the rate per pound depending upon the labor situation.

There can be no definite statement as to what the pitting loss should be. It depends upon the following factors:

1. Whether the cherries are of the free stone or cling stone type.
2. Whether they are very firm or very soft.
3. Whether the pits are large or small.

With prime quality fruit, the average pit and stem loss should be as follows:

1. Large fruit, 14 per cent.
2. Medium fruit, 18 per cent.
3. Small fruit, 20 per cent.
4. Dipping, 24 per cent.

These figures are based on the observation of more than two thousand barrels of each size over a period of five different crops.

One hundred and eighty pounds of the pitted fruit is then weighed in a barrel, covered with water containing one quart of sulphurous acid, and the barrel headed up. For this purpose a regulation whisky barrel or a shaved alcohol barrel is the best type to use. Broken cherries are put through the same process, but separately.

Method of Coloring

After you decide to process, the water is drained from the fruit which is again washed in clear cold water and drained. It is then covered with thirty gallons of a color solution, made as follows:

30 gallons of water
3 ounces Ponceau Red, 56.3
1 pint sulphurous acid, 3 per cent

This solution is allowed to stand on the cherries for a week, and the barrel is rolled daily, so that they will take the colors uniformly.

The color water is then drained from the cherries and pumped into a tank where it is tested for color value by a tintometer, after which the color correction is made. If the thirty gallons of color water has a color value of one ounce, two ounces of Ponceau is added to bring it up to the right intensity. For many years manufacturers threw away this drained color water, thus subjecting themselves—with Ponceau Red worth $6 a pound—to a loss of from forty to sixty cents a barrel. Figured on the basis of eight hundred barrels a month, one can readily see the huge saving effected by the use of the tintometer.

The cherries are now ready for the first syrup, twenty-six gallons of which are prepared according to the following formula, and poured over the fruit:

60 pounds sugar
21 pounds water
1 quart sulphurous acid, 3 per cent

They are rolled daily for a week or ten days, or until the Baume of the syrup has been reduced to 8 degrees. This can be estimated by drawing off a small amount of water into a cylinder and inserting into the cylinder a Baume hydrometer. At that point it is drained off and pumped into a tank where it is built up by the addition of sugar to 23 Baume, known as second syrup. The following formula illustrated the building up process.

The cherries are covered with 26 gallons of the 23 Baume syrup and allowed to remain for at least one week, when they are ready for use if necessary. However, the longer they remain in this solution the better they will be. The syrup drained off these cherries when they are sent to be bottled or bulked is about 14 Baume, and the manufacturers have the choice of adding water and reducing it to 12 Baume, to be used in the second step, or adding sugar to 23 Baume and using it in the third step.

If vegetable color cherries are desired, the process is the same, using Cochineal instead of Ponceau Red, with alum as a mordant. In green cherries either light green S. F. yellowish or Guinea Green B is used.

Bulk cherries are sold in ten different sizes:

Sizes of Cherries

600 Count
700 Count
800 Count
900 Count
1000 Count
1100 Count (Dipping)
1200 Count (Dipping)
1300 Count (Dipping)
1400 Count (Dipping)

In the barrel the cherries are covered with a finishing syrup, made according to the following formula:

12 ounces benzoate of soda
20 gallons water
3 ounces oil bitter almonds
100 pounds sugar

A fifty gallon barrel of cherries, therefore, would contain 300 pounds of fruit, and approximately 18½ gallons of syrup. The syrup contains a shade less than one-half pound of benzoate of soda, and the whole contents of the barrel is about 485, making the benzcate of soda content one-tenth of 1 per cent.

Sizes of Containers

The standard sizes of container used is designated in the following table by weight of cherries and syrup. For each size a different size of cherry is used:

3 ounce glass jar—800-900 count cherry
5 ounce glass jar—900 count cherry
8 ounce glass jar—700-800 count cherry
16-28 ounce glass jar—600-700 count cherry
½-1 gal. glass jar—700-800 count cherry

The finishing syrup used to cover the bottled cherries is identical with the bulk finishing syrup, except that no benzoate of soda is used. All glass goods are pasteurized, although some manufacturers do not pasteurize one-half gallon or one gallon, but use instead benzoate of soda, 1-10 of 1 per cent. The time of pasteurization is important as well as the degree of temperature used: 3 ounces and 5 ounces, 175 degrees for 40 minutes; 8 ounces, 175 degrees for 45 minutes; 16 ounces and 28 ounces, 176 degrees for 50 minutes; ½ gallon and 1 gallon, 180 degrees for 1 hour.

The bottles are allowed to cool after pasteurization and then labeled and packed into the following standard cases:

3, 5 and 8 ounces—48 to a case
16 ounces—24 to a case
28 ounces—12 to a case
½ gallon—6 to a case

Special cases are packed as follows:

3 ounces—2 and 3 dozen to a case
5 ounces—2 dozen to a case
8 ounces—2 dozen to a case
gallons—4 jars to a case

With some exceptions the state laws governing the sale of maraschino style cherries conform with the Federal Food and Drug Act of 1906. The exceptions are:

Pennsylvania—allows no sulphurous acid,
Wisconsin—allows no benzoate of soda;
North Dakota—forbids use of coal tar colors;
South Dakota—forbids use of coal tar colors;
Minnesota—forbids use of coal tar colors;
Indiana—allows no benzoate of soda;
New York—requires statement of amount of sulphurous acid to be stated on label in 8 point Brevier type;
Illinois—requires statement of amount of sulphurous acid to be stated on label in 8 point Brevier type.

Manufacturers have found it difficult to meet the requirement of the state of Pennsylvania regarding the total elimination of sulphur dioxide or sulphurous acid, but their efforts have resulted in flat color, soft fruit, and a cherry that is altogether unsatisfactory. A method has been devised, however, by which "Pennsylvania Cherries" are now produced by a rapid and simple process and with excellent results.

Weight of Cherries and Syrup in Standard Bottles

3 ounce	3 41	1.58	1.83
5 ounce	5.18	2.25	2.93
8 ounce	8.86	3.58	5.08
16 ounce	15.83	5.83	10.
28 ounce	29.	10.	19.
½ gallons	76.	25 1-3	50 2-3

Cherry Types (Standard)

Whole
Whole and broken
Minced
Crushed
650 count
800 count
900 count
1000 count
1100 count

Color

Cochineal (vegetable) aniline
White, Green (mint)

Cost Accounting Methods

Raw Cherries

1 bbl. 133 kilos (292.6 lbs.)	$9.26
Truckage	.50
	29.76

Pitted Cherries

1 bbl. Pitted (180 lbs.)	29.76
Pitting charges—Obtained by dividing total payroll of pitting dept. by no. of lbs. pitted	9.00
Sulphur water, etc.	.50
	$39.26

Cherries in Color

1 bbl. pitted cherries	$39.26
4 oz. color Ponceau 56 RRR	2.00
Labor (approx.)	.50
	$41.76
Less color value of liquid returned from cherries 2 oz.	1.00
	$40.76

Cherries in First Syrup

1 bbl. cherries in color	$40.76
Syrup at 14 deg. Baume. This cost is calculated by multiplying the no. of 14 deg. syrup by no. of gals. and then by the cost per lb. of your sugar. Let us say for example there is 50 lbs. sugar @ 6c. per lb.	3.00
Labor	.50
	$44.26
Less returned syrup at approx. 9 deg. Baume	1.80
	$42.46

Cherries in Last Syrup

Cost per bbl. cherries 1st syrup	$42.46
20 deg. syrup, calc. as cont. 87 lbs. sugar	5.22
Labor	.50
	$48.18
Less returned syrup 15 deg. B. calc. as 50 lbs. sugar	3.00
	$45.18
Used on finishing floor 500 bbls. @ $45.18	$22,590.00
Syrup returned @ 25c per gal., 10,000 gal.	2,500.00
	$20,090.00
Total Labor	2,000.00
	$22,090.00
Total lbs. produced, 99.000 lbs.	
Cost per bbl.	.223

Cost per Bbl.

290 lbs. @ .223	$64.67
Finishing syrup 174 lbs. @ .30 per gal.	5.22
Benz. Soda	.30
Bbl.	2.50
Trucking charge to RR. Sta.	.50
Overhead 5 per cent of cost so far	3.66
	$76.85
50 gal. to bbl.; cost per gal.	$1.537

Bottle goods costs are calculated as follows: Let us take for example a case of 3 oz. three dozen to the case:

4½ lbs. of cherries (2 oz. to bottle x 36) @ .223	$1.004
2¼ lbs. syrup (1 oz. to a bottle x 36) @ .25	.570
36 bottles $3.00 per gross	.750
36 labels $3.00 per M.	.120
Container	.120
Caps	.250
Container labels	.030
Overhead 5 per cent on cost so far	.143
	$2.987
Trucking	.250
	$3.237

DIGESTS FROM FOOD MAGAZINES

Vitamin B As A Factor in Nutrition

Vitamin B is a dietary essential whether its merit lies in its food value or in its stimulus to food utilization, is the opinion expressed by Dr. George R. Cowgill of the Sheffield Laboratory of Physiological Chemistry of Yale University, in the August issue of "The Nation's Health." "Vitamin B," says Dr. Cowgill, "was the original dietary essential to which the term vitamin was applied." Something of the history of the study of vitamins shows the manner in which scientists came to realize that the lack of vitamin B results in the disease known as beri beri. "We have at present vitamin A, vitamin B, and vitamin C. Discoveries of the exact nature of each of these vitamin are among the research prizes of the future."

"Considerable vitamin B research," he continues, "has revolved around topics of interest in answering the question as to what people should eat in order to insure an intake of this important dietary essential. . . . Egg yolk, tomato juice, and dried yeast contain relatively large amounts whereas ordinary white bread has but little, and such a substance as beef extract, from which bouillon for convalescents is frequently made, contains none of it whatever. The importance of such facts particularly to the doctor, nurse, and dietitian, hardly needs discussion."

"It has been shown that, while animals at all ages require vitamin B, the growing organism is particularly sensitive to a lack of this substance." The question has been raised as to the function of this important vitamin in the body. Why is it necessary? Dr. Cowgill states that "some studies have been made testing the idea that the proper handling of carbohydrate by the body depends in some measure upon vitamin B, but no conclusive experiments along this line have been reported. . . . "However, a very recently published study of the effect of exercise on the young rat's need for vitamin B reports that the animal's requirements for this substance is uninfluenced by muscular activity."

The writer tells of a number of most interesting experiments which show the close relationship which vitamin B bears to the desire to eat. These experiments show in a very striking way, not only that vitamin B is directly connected with the desire to eat, but also "that the amount of vitamin B required to restore the appetite, and the amount which must be eaten daily to maintain the appetite without failure, bear a very definite relationship to the size of the animal." That is, the quantity of vitamin B is important.

Dr. Cowgill emphasizes the fact that, "this problem of combatting loss of appetite is one that confronts the physician, and nurse, as well as the dietitian who has the feeding of an institution or a family of active children as her responsibility," and although there are many other causes of loss of appetite, nevertheless "the role which this vitamin plays in maintaining the desire to eat has some very definite applications." He suggests that since the usual diet for sick and convalescents does not contain a large amount of vitamin B and results therefore in a loss of appetite, that more care should be used to include a liberal quantity of food rich in vitamin B in such diets.

Milk Pro and Con

Many facts for and against milk are condensed in a short article by J. E. Hearn, Physiological Chemist at Columbia University, in the August number of "American Cookery." The writer states that "milk is a good food, not because of its simplicity but because it is complicated." He gives the composition of milk as follows: pure milk contains about 88 per cent water—an essential to the body, the inorganic elements in sufficient quantity with the exception of iron which is supplied in abundance by other foods in a normal diet, about 4 per cent of proteins of good quality, and about 3.5 per cent of fat. Lactose, the principal carbohydrate, not only furnishes fuel but also food for a micro-organism which tends to crowd out harmful bacteria in the intestinal tract. Unfortunately disease producing bacteria are also frequently present in milk. Milk is rich in vitamin A but frequently lacks the other vitamins.

In comparing cow's milk with human milk for infants, Mr. Hearn shows that if an infant is fed the same amount of cow's milk that it has been receiving of human milk, it will require three times the amount of gastric juice that it has been using. Some infants are so constituted as to be unable to secrete this extra amount of gastric juice and so do not thrive on insufficiently diluted cow's milk.

"Infants fed entirely on sweetened condensed milk mixtures receive too much carbohydrate, and too little fat, protein, and salt. . . . If such feeding is continued, as observed by Dr. Utheim, the infants stop gaining weight and develop a nutritional disturbance, which, at last, leads to athrepsia or general atrophy."

According to a theory sponsored by Dr. Kellogg of Battle Creek, it would seem that the addition of lactose or maltose to a small amount of milk would answer the same purpose as drinking the enormous quantities recommended by some dietitians. But on the other hand Mr. Hearn reminds the reader of the well known fact that a little milk and much rennin form a tough clot, but much milk and little rennin make a soft curd. He also notes that Dr. Emmett Holt attributes acute intestinal disturbances to so much sugar in milk. Thus it would seem that enormous quantities of milk and smaller amounts plus lactose are equally to be condemned.

A comparison of the advantages and disadvantages of raw, pastuerized, and sterilized milk follows, also directions for making a milk substitute of almonds. And, lest we should think that milk has not been sufficiently praised, the writer reminds us in conclusion, that there are two points of approach to food problems—the nutritional and the gastronomic, and that both like science and religion are true.

What's New in Institutional Kitchen Equipment

Although there has been little recent development in the line of strictly new equipment for the institutional kitchen, there have been a number of interesting changes in equipment long on the market, writes George A. Smith in the September "Journal of Home Economics." The electric kitchen has made very rapid strides, and if an institution can secure electricity at a reasonable cost, the actual expense for the operation of the kitchen is very little. It does away with coal, ashes, or even matches, economizes heat, and allows for cooler kitchens. The cost of the larger pieces of equipment is considerably more than for the same size of coal or gas equipment, but toasters, plate warmers and urns are very little more expensive than the gas heated ones.

The heavy gas range and coffee urn have been subjects for a great deal of experimentation. A number of self-pouring, self-cleaning urns with automatic device for measuring water, are now on the market and are very successful.

A new vegetable peeler places each vegetable on a shaft and removes the peel in a long ribbon with a knife.

Mr. Smith reminds the reader that even with the latest in equipment, it is most important to study the placing of each piece in order to have a maximum saving of time and labor.

Enhancing Food Values

(Continued from page 416)

ardized as to the exact amount of active principle. Cod liver oil, on the other hand, varies in vitamin D content. Investigations have shown that one pint of cod liver oil will very often have 100 times as much vitamin content as is contained in another equal volume purchased at the same store.

This antirachitic factor would enhance the value of milk to a considerable degree, because, as we have shown, milk is more nearly balanced in vital factors, and in proteins, carbohydrates and fats than any other food we know of. It is especially rich in the precious salts.

It is true, nevertheless, that we have overrated milk because we had been under the impression that vitamin A, in which milk and butter fat is rich, was the antirachitic factor.

Since we have been shown by Hess, McCollum and others that milk contains very little, and very often none at all, of this antirachitic factor, and that it does not prevent nor cure rickets, we can no longer attach to it the importance that it formerly had.

In his book on "Newer Knowledge and Nutrition," McCollum in describing some of his animal tests with rachitic rats informs us that "butter fat even up to 50 per cent of food mixture fails under this test to stimulate calcium phosphate deposition as effectively as does 2 per cent of cod liver oil."

In view of the fact that this antirachitic vitamin is now available, and that it alone has the power of stimulating salt and calcium metabolism, and inasmuch as milk contains such large quantities of calcium, a combination of the antirachitic vitamin with milk would enhance the value of milk greatly as the ideal food.

Because of its very high efficiency and concentration, the antirachitic vitamin is applicable in minimal quantity. It would not change in the least the color, odor, or the taste. It would make very little difference in the cost.

In this way the difficulties caused by the seasonal variations of the vitamin content of milk, and the numerous other unavoidable causes would be overcome. It would be of special value in combination with condensed, powdered, or evaporated milk; and it would give to skim milk a nutritive and remedial value that would make it as desirable as the best grade of pure milk.

With the addition of this vitamin, milk in all its forms would not only be supplying the body with the necessary growth promoting, and the skeletal and teeth building factors, but would be guaranteeing the proper metabolism of these factors.

The majority of the cases of malnutrition prevalent among the 6,000,000 school children coming from average American families, is due chiefly to an insufficient intake of the antirachitic vitamin. A lack of this principle prevents the assimilation of the calcium and the other salts. The drinking of a quart of milk a day under such adverse conditions cannot effect a cure. What the child needs is a metabolic stimulant or regulator; and this is available only in the antirachitic vitamin.

The importance of the use of such a milk for the prevention of rickets cannot be stressed too much, because rickets is not merely a disease of the bones. The subsequent health, growth, and development of the whole body and mind is affected by it.

V. G. Plimmer, in his book "On Vitamins and the Choice of Food" shows that "Children suffering from this condition are more easily attacked by broncho-pneumonia, tuberculosis, and other infections, and these diseases are far more grave if a child is rickety."

The antirachitic vitamin has been determined chemically and physiologically. It can be standardized as to dosage, and it is easy to determine with accuracy the amount to be used so as to make each glass of milk equal in active principle to two tablespoonfuls of the best grade of cod liver oil.

In view of these facts, and in view of the difficulties that are experienced by all who have tried to administer cod liver oil, especially to children, there remains little doubt as to the desirability of such a combination with milk.

The Antirachitic Principle in Bread

Rich milk, one of the chief ingredients in the present standardized bread of the Ward Baking Company, is used to give bread a higher vitamin A content. The hearts and the coverings of the grain, which are destroyed in the processing of the flour for commercial distribution, are likewise added to the bread as a source of other vitamins and mineral salts.

Although the addition of these factors to bread has been quite an accomplishment in food standardization, and the company which has been so progressive deserves much credit for being pioneers in this new field, the best bread is still deficient in some respects. It lacks the antirachitic factor which would make it more truly the "staff of life."

The standardized bread of the Ward Baking Company was perfected before the discovery that vitamin A does not contain the antirachitic factor. This is undoubtedly the reason why this vitamin is not included with the other valuable factors in the bread.

This bread could be greatly improved, and be considered perfect in accordance with the latest discoveries in the field of science if it also contained the antirachitic vitamin.

As with milk and any other food the presence of this antirachitic principle would assure the proper appropriation by the body of all the valuable and mineral salts of the bread.

In a discussion of the vitalization of food values it is difficult to leave such a product as margarin out of consideration; especially when we take into consideration the advisability of a well balanced diet for the family with a limited income.

We find that considerable study has been given to the improvement of margarin and that repeated experiments have shown it to be comparable to butter in most respects such as digestibility, caloric value, taste, and appearance.

Since we have learned that milk and butter do not contain the antirachitic vitamin it would appear that it is now possible to standardize margarin by adding sufficient amounts of fat soluble A to make it comparable to butter in every respect.

In fact the discovery of the antirachitic vitamin from obtainable sources offers the margarin producers an opportunity to produce a butter substitute that could be made even more preferable than butter itself.

In the April 28, 1923, issue of the "London Chemical Age," we find such a procedure recommended by the famous English chemist, Dr. W. W. Myddleton, who has studied this problem for many years. He recommends that small amounts of some such substance as cod liver oil incorporated in margarin "would remove the last reproach from the synthetic fat as a staple food."

We also find in this country such men as Doctor Arthur D. Holmes exhorting the margarin manufacturers to devote more attention to the study of the vitamins, and stressing the importance of the antirachitic vitamin as one of the ingredients in margarin.

From the nature and chemical composition of the antirachitic vitamin that is contained in the liver lipoid it seems advisable to use it in preference to cod liver oil, because of its palatability and stability. Unlike cod liver oil, the liver lipoid will stand up as long as any other ingredient in margarin without disintegrating.

The enhanced value that this factor would give to margarin would help more than anything else to remove the prevailing prejudice on the part of many to the use of margarin as a staple food.

In the standardization of such foods as have been recommended we must always keep in mind the factor of economy, for the average human weakness is to neglect that which is more expensive without regard to its essential value. It is also a difficult matter to recommend a balanced nutrition obtainable at our city markets which will not be prohibitive in price because of the limited income of the average family.

BOOK REVIEWS

The Infant and Young Child. Its Care and Feeding from Birth Until School Age. A Manual for Mothers. By John Lovett Morse, A.M., M.D., Professor of Pediatrics, Emeritus, Harvard Medical School; Edwin T. Wyman, M.D., Instructor in Pediatrics, Harvard Medical School; and Lewis Webb Hill, M.D., Assistant in Pediatrics, Harvard Medical School. W. B. Saunders Company, Philadelphia and London. $1.25.

Preparation for the baby's arrival and detailed directions in regard to his subsequent feeding and care are included in this volume. The chapters on "Feeding" emphasize the importance of a thorough knowledge of dietary values and outline the proper foods under both normal and emergency conditions. Artificial feeding is the first year, with tables giving the proper amounts for different ages, home modification of milk, feeding in the latter part of the first year, in the second year and from two to six years, are some of the subjects included under this heading.

A chapter is devoted to recipes for easily digested foods, and the causes and cure of malnutrition are dealt with.

The book is profusely illustrated, and the information given should be valuable to the mother and all who are interested in the dietary needs and care of young children.

Personal Hygiene Applied. Illustrated. By Jessie Feiring Williams, A.B., M.D., Associate Professor of Physical Education, Teachers College, Columbia University. W. B. Saunders Company, Philadelphia and London. $2.50.

Students and all interested in the study of the mental and social aspects of health as well as its physical side, will find this book instructive and helpful to a better understanding of the laws governing healthful living. The mind and its influence on health is stressed. There are comprehensive chapters dealing with the hygiene of the human system, giving illustrative matter in the form of tables and charts.

A chapter on the "Hygiene of Nutrition" shows the importance of a proper diet and an intelligent understanding of the laws of nutrition, and deals with the following subjects: sources of energy, digestion, assimilation and nutrition; caloric value of different articles of food; classification of food; how vitamins affect nutrition and growth; foods and vitamins; destruction of vitamins; mineral salts as a dietary essential; composition of the body in terms of elements; the role of mineral salts in food; the mineral salts and body reaction; the hygiene of nutrition; causes of indigestion; fads and fallacies in diet; food adulteration; alcohol; coffee, cocoa and tea.

Observation on Milling. By Edgar S. Miller. First Edition. National Miller, Chicago, Ill.

An exposition on practical milling, dealing with present conditions and practices, the importance of scientific knowledge to the milling industry, detailed information regarding the structure of wheat berries, and the chemical and physical effects of different processes employed in preparing flour.

The volume is profusely illustrated with drawings by the author, and tables are given showing the characteristics and protein content of various forms of wheat, and the distribution of gluten in the grains.

A clearly written analysis of mill practices and their significance of interest both to the trade and the layman.

The Red Book, 1923 Edition, Orrin Thacker Directory of Wholesale Grocers, Semi-Jobbers, Chain Stores, etc., in the United States and Canada. Published by Orrin Thacker Directory, 33 West Gay Street, Columbus, Ohio. The Franklin Printing Company, Columbus, Ohio. $2.00.

A very complete and useful guide to the wholesale grocery business, condensed into a small volume. It includes a "Key to Rating"; a list of associations of wholesale grocers and the names and addresses of their secretaries; a list of the wholesale grocers in this country and Canada; a chain store reference list, alphabetically arranged; and a division headed, "Semi-Jobbers and Chain Stores in the Grocery line in the United States, 1923."

The Beverage Blue Book, 1923. The Standard Directory, Buyers' Guide and Reference Volume for the Beverage Industry, H. S. Rich & Company, 431 South Dearborn Street, Chicago, Ill.

A concise publication, incorporating in easy reference form information in regard to the beverage industry. Manufacturers of carbonated beverages in the United States and Canada are listed, brewery plants in the United States, Canada, Mexico, Central America and South America, and bottlers' associations in this country.

A reference sections supplies general information, including the following topics: American bottlers of carbonated beverages; application of the Federal Food and Drugs Act to carbonated beverages; state laws and regulations applying to bottled carbonated beverages; beverage brand selection and protection; state officials directing enforcement of food laws in regard to beverages.

The food value of carbonated beverages and their place in the diet compared with other foods, is estimated by dietitians, food officials and chemists. A sirup table indicates quantities and prices.

Ideas for Refreshment Rooms. Hotel, Restaurant, Lunch Room, Tea Room, Coffee Shop, Cafeteria, Dining Car, Industrial Plant, School, Club, Soda Fountain. A Ready Reference to Catering Methods, Covering a Wide Range of Practice. The Hotel Monthly Press, 443 South Dearborn Street, Chicago, Ill.

An interesting and instructive volume, presenting information covering all branches of group feeding; the selection, preparation and service of foods in different types of eating places, educational institutions and industrial plants; the utilization of new ideas by these helpful suggestions for solving catering problems; and much in the way of useful general information.

An address by John Willy before the Ohio Home Economics Association on "The Gospel of Nutrition" is printed in part, emphasizing the value of trade journals in spreading information on the subject of the importance of proper food to the health and success of mankind. A wealth of other instructive matter along this line is also supplied.

The book is attractively illustrated with photographs and sketches, and also contains menus from well known restaurants, recipes and cost tabulations.

Trade Association Activities. By L. E. Warford and Richard A. May, under the direction of Julius Klein, Director, Bureau of Foreign and Domestic Commerce, with an introduction by Herbert Hoover. Superintendent of Documents, Government Printing Office, Washington, D. C. 50 cents.

This volume, the result of an inquiry by the Department of Commerce, describes the constructive activities of trade associations with regard to public welfare.

In Mr. Hoover's introduction he summarizes the functions of these associations, stressing the need for cooperation and outlining their activities. These he tabulates under the heads: trade, public, employee and government relations, transportation, cost accounting, credit and collection, insurance, legislation statistics, commercial and industrial research, simplification and standardization.

With these general headings as a basis, comprehensive and detailed information is given covering the relation of trade associations to the public in every line of industry. The work of government bureaus and departments is set forth, including that of the Foodstuffs Division and its cooperation with leading associations in food production and distribution.

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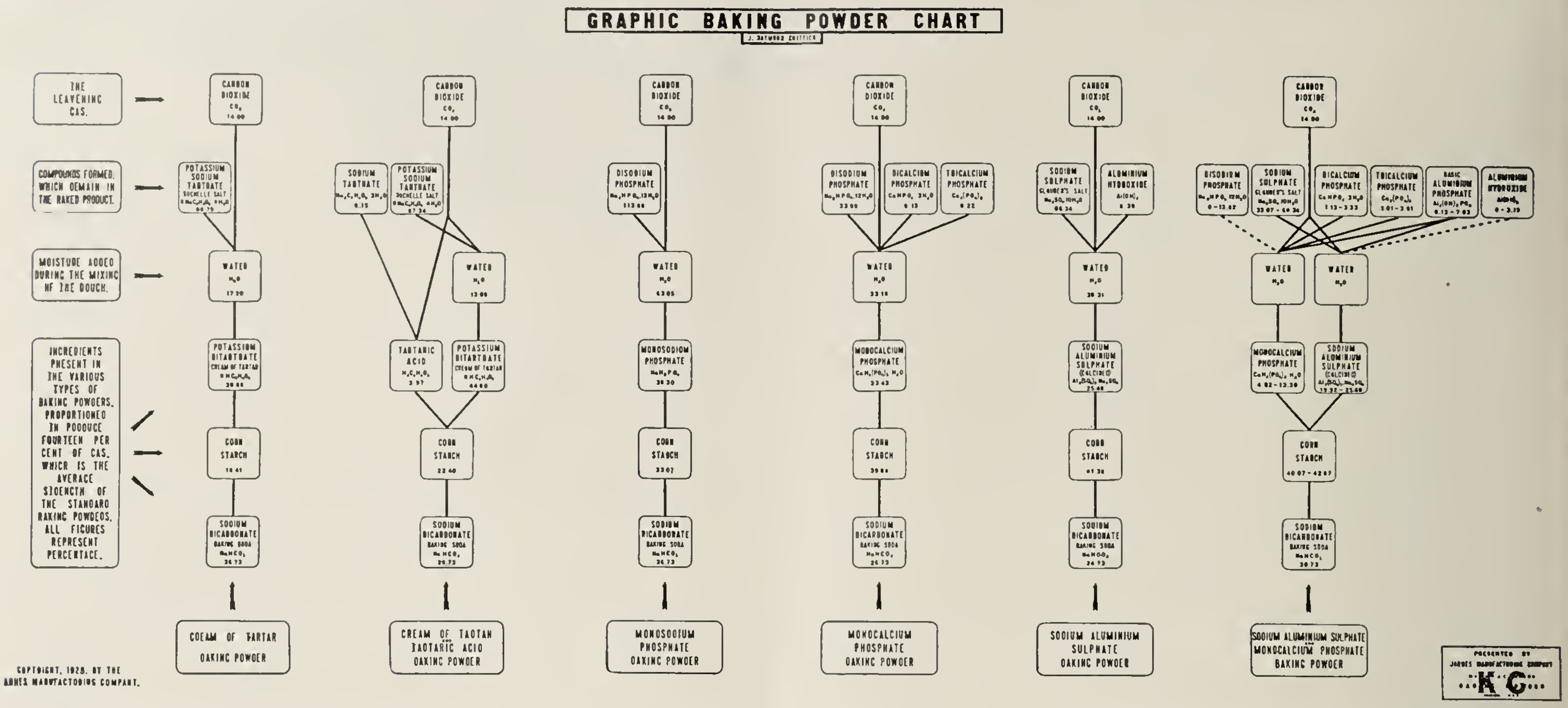
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Baking Powder Standards

According to the United States definition and standard: "baking powder is the leavening agent produced by the mixing of an acid reacting material and sodium bicarbonate, with or without starch or flour. It yields not less than twelve per cent of available carbon dioxide. The acid reacting materials in baking powder are, tartaric acid or its acid salts, acid salts of phosphoric acid, compounds of aluminium, or any combination in substantial proportions of the foregoing."

The graphic chart here given shows the ingredients present in officially recognized baking powders, also the substance formed when they react. The total gas strength of baking powders when manufactured varies, therefore equal weights of different baking powders do not necessarily give the same amount of gas. For comparison, however, the figures above have been calculated to represent the theoretical weight of each compound used and formed in the production of fourteen per cent of total carbon dioxide.

Different types of baking powder react with different degrees of rapidity in the dough or batter, thereby liberating the leavening gas. Classified with regard to their relative speed of action at room temperature, there are, broadly speaking, two classes, the faster acting powders containing the tartrates and phosphates and the slower acting powders containing sodium aluminium phosphate.

In using baking powder the tendency is to use too much rather than too little. As a general rule larger quantities of baking powder are required when using the more rapid acting powders.

Frozen Meats in China

People in China and the Far East have always shown a decided preference for freshly killed meat, but that preference is being overcome to a great extent. Australia and Argentina are furnishing frozen meat to that region and it is generally believed that the demand will increase.

Pints or Quarts

Figures are given out by the Dairy division of the United States Department of Agriculture, show that 41 per cent of the bottled milk handled in 1914 was in pints, while during this past year only 14.5 per cent was in pints. The cost of handling milk in pints is much greater than in quarts for several reasons: the actual handling of the same quantity of milk in pints is greater than in quarts; it takes as long to deliver a pint as a quart, hence the cost of delivery in the smaller package is twice as much for the same amount of milk; bottle losses, with the smaller bottles is greater than with quarts, not because of breakage, but because the small bottles make convenient containers for other things.

In the past few years, dealers have discouraged the use of pints by making the price one or two cents more than the price of a half quart. This difference in price is not only to make up the difference in the cost of handling, but also to increase consumption by making it more economical to buy a quart of milk than two pints.

Distributors who have a large proportion of wholesale trade, still bottle a good deal of milk in pints and half pints. However, this is for individual consumption largely in restaurants, rather than for family use.

California Figs

The California Peach and Fig Growers are putting out a new pack of calimyrna figs. They are endeavoring to show the American public that the California product is equal in quality to the Smyrna fig and surpasses it in sanitary packing. It is their purpose to take figs out of the confection class in this country, and to place them in the staple food class, the position they now hold in foreign countries.

Spanish Olive Crop Increasin

The Spanish olive harvest during the 1922-1923 season totaled 1,539,551 metric tons, while the oil yield was 289,114 metric tons, American Consul Frank Anderson Henry, Barcelona, informs the Department of Commerce. While it is too early to make any forecasts as to the next olive crop, which will be harvested during the closing months of this year and the first of next, it is believed that the yield will be higher than that of 1922-1923. Spain is now the greatest olive oil producing country in the world, its output amounting to about 50 per cent of the total, but exporters are confronted with a number of difficulties which tend to hold down foreign trade. Increasing costs of cultivation, owing to a higher valuation of lands, higher wages, and cost of machinery and fertilizers have somewhat of a depressing effect. The price of containers is also high in Spain. The depreciation of currency in other oil exporting countries such as Italy, France, and Portugal, places Spain at a disadvantage in the export market, as does also the depreciation of currency in the consuming countries of central Europe. Much olive oil was formerly sold in bulk to France and Italy where it was refined, packed and shipped under special brands, but the increased cultivation in Algiers, Tunis, and Italy has had an unfavorable effect on this trade.

Argentine Government Buys Meat Packing Plant

Subject to the confirmation of the legislature, the sale of the Anglo South American Meat Packing Establishment (owned by the Vestry interests) at Zarate to the government of the Province of Buenos Aires is reported at the Argentine capital. According to Consul General W. Henry Robertson in a report to the Department of Commerce, the sum involved is said to be approximately 1,500,000 pounds sterling. The plant is equipped to slaughter 1,500 cattle and 4,000 sheep daily in addition to 300 cattle for canning purposes

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Walter G. Campbell To Be Director of Regulatory Work

Appointment of Walter G. Campbell, now Acting Chief of the Bureau of Chemistry, as Director of Regulatory Work of the United States Department of Agriculture, a new position created by Congress, is announced by Secretary of Agriculture Wallace. In his new position Mr. Campbell will assist the Secretary of Agriculture in administering the law enforcement work of the department. It is expected that he will take up his new duties about October 1. As Director of Regulatory Work for the department, Mr. Campbell will, under the Secretary, have the general supervisory administration of the regulatory acts which it enforces. Among the most important of these is the Food and Drugs Act, the Meat Inspection Act, the Tea Inspection Act, the Cotton Futures Act, the Grain Standards Act, the Warehouse Act, the Packers and Stockyards Act.

Mr. Campbell was appointed Chief Food and Drug Inspector in the Bureau of Chemistry in 1907 to organize the inspection work in the enforcement of the Federal Food and Drugs Act which became effective that year. Under his leadership this work became so effective that when the entire Food and Drugs Law enforcement work of the Bureau was reorganized in 1914, he was selected as Chief of the Eastern Food and Drug Inspection District. In 1916 Mr. Campbell was appointed Assistant Chief of the Bureau of Chemistry, directing the enforcement of the Food and Drugs Act throughout the entire country. Upon the resignation of Dr. Carl L. Alsberg in July, 1921, Mr. Campbell was appointed Acting Chief of the Bureau. He was ineligible for the position of Chief as the law requires the holder of that position to be a chemist.

During the two years Mr. Campbell has had full charge of enforcing the Food and Drugs Act he has increased the efficiency of the work by perfecting the project system. This system provides a plan of operation, by means of which all the organization units of the Bureau located in different sections of the country work together toward the same end. In this way various forms of adulteration and misbranding are attacked in all sections of the country at once and checked or eliminated entirely in a short time with the least expenditure of time and funds. The form of organization and the system developed for the enforcement of the Food and Drugs Act has been used as a model for the enforcement of other Federal statutes.

Suggestions For Judging Foods On The Market

The following rules printed in the "Retailers' Journal," will be found helpful in choosing the various foods mentioned:

Potatoes—In preference to any other kind, look for a clean, white tuber, with a fine, dust-like grit on the skin. Beware of the potato which shows traces of black dirt. In most cases it will cook soggy. On the other hand, the sandy potato will be dry and mealy when cooked. Some commission men, however, do not hesitate to sprinkle sand on potatoes that have grown in clay or loam. So here, again, the retailer must be watchful.

Carrots—Small, young carrots are always to be preferred to the large sizes, for the reasons that this vegetable develops a peculiarly strong and pungent taste after reaching maturity.

Cabbage—Choose soft, spongy heads for cooking purposes. But for slaw, make it a point to get the firmest heads obtainable. The reason is obvious.

Dried Beans—Never hand out your money for navy or lima beans unless they are positively free from spots or specks. Otherwise, you will surely be losing trade on beans.

Turnips—Before buying white turnips, see if they will crush under the pressure of your hands. If they collapse easily, leave them alone, for they are pithy and consequently fit for no other use than hog-fattening.

Radishes—Never judge this deceptive vegetable by appearance. Break open and look for pithiness. Also examine carefully for rust colored streaks and spots on the skin—which always means worms.

Apples—If you are not familiar with the variety before you, make yourself at home and try one. Choose thin-skinned apples for select trade. Thick-skinned apples, like thick-skinned people, belong to the lower grades.

Spices—There is always more or less danger of adulteration in ground spices—unless you know your jobber. Some retailers grind their own spices.

Beef—A thick, white coating of fat, together with a deep thickness of bright red meat, will in most instances, insure you the choicest quality of beef.

Pork—Avoid gobby pork; that is to say, pork which carries its fat in gobs or lumps. To get this meat at its best, choose the marbled, or interlarded kind.

Onions—Unless it has gotten to be late in the winter or early in the spring, when nothing better can be done, retailers should never consider sprouting onions at any price. They are not only depreciated about fifty per cent in value, but, moreover, give a decidedly bad tone as well as odor to the store.

Fruit—Whenever possible, choose fruit that is still firm; not green, of course, but firm. Dead ripe fruit of any kind, unless sold at once, will mean loss of money to the grocer.

Lettuce—Choose lettuce which has a light or yellow heart. Dark green lettuce is generally very tough and grass-like.

Sweet Potatoes—A medium size, inclined to roundness, and free from spots, is the best.

Balkan Prunes Might Improve

An improved quality of prunes is looked for this year by the Serbian producers. General conditions are much better in that country and it is believed that the crop for this year will be financed and transported more efficiently than in the past. As a rule, the Serbian prune is small and it has been found difficult to secure large shipments of uniform quality. An endeavor is being made to increase the quality of the exported prunes, states Consul K. S. Patton, Belgrade, in a report just received by the Department of Commerce. The total exports of prunes last year amounted to 40,443,383 kilograms, compared to 38,376,730 kilograms the year before. The declared export of Yugoslav prunes at the Trieste and Belgrade consulates, destined to the United States, last year amounted to 2 290,628 pounds, valued at $142,529.

Undrawn Poultry

Several years ago some elaborate and extensive experiments were conducted in an attempt to decide whether poultry keeps better drawn or undrawn. Since these experiments were conducted thousands of shipments have been under observation. The conclusion has been the same in every case; that is, the undrawn poultry keeps much better than the drawn.

The particular reason for this is the fact that with the ordinary commercial methods used in drawing poultry, the birds become contaminated with bacteria which multiply rapidly causing deterioration. Cold storage checks the growth of these organisms but does not entirely stop them and for that reason the undrawn poultry is to be preferred. It would not be possible to entirely prevent this contamination during drawing unless scientific methods similar to those used by surgeons and bacteriologists were adopted. Needless to say the expense of such a procedure would be prohibitive.

It is the general impression that poultry should be drawn before it is put into cold storage or sent forth into the regular channels of trade. When the fact becomes better known that the undrawn poultry shows less deterioration, there should be no objection to its use.

Recent Patents

The following patents of interest to readers of this journal were recently issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C. at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,162,602. Chocolate mixing and melting machine. Otto A. Labus, Wisconsin Rapids, and Charles H Peth, Wausau Wis.; said Labus assignor to American Carbonic Machinery Co., Wisconsin Rapids, Wis.

1,462,883. Process and apparatus for making confections. William S. Cloud Peoria, Ill.

1,463,954. Food product and process of preparing the same. Charles W. Hess, Evanston, Ill.

1,463,964. Apparatus for treating vegetables or fruit with a skin-loosening agent. Harry M. Miller South Pasadena, Cal., assignor to National Peeling Machine Co., Los Angeles, Cal.

1,464,520. Flavoring agent for beverages. Louis A. von Horst, Coburg, Germany.

1,464 710. Process of pretreating dried yeast to increase the baking strength. Arthur W. Hixson, Leonia, N. J., assignor to Fleischmann Co., New York, N. Y.

1,465 226. Machine for the manufacture of sweetmeats. Paul Zimmer, Wurzburg, Germany.

1,465,402. Positioning and feeding mechanism for confection-wrapping machines. Joseph P. Remington, Philadelphia, Pa.

1 465,459. Process for preparing sirup. Charles F. Walton, Jr., Washington, D. C., dedicated to the people of the United States.

1,465,525. Machine for cutting corn from the cob. William W. & Samuel E. Morral, Morral Ohio.

1,465,829. Method of treating almonds. George W. Pierce, Davis, Cal., assignor to California Almond Growers Exchange, San Francisco, Cal.

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Established 1906

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The Value of Calcium in the Diet

Although It Is Not a Fuel Food and Has No Caloric Value, It Constitutes Three-Fourths of Mineral Content of the Body

By DR. HELEN S. MITCHELL
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GROWTH is the process of building the house in which we are to spend a lifetime, and a strong framework is one of the first essentials of a well-built house. For the body the material of the frame is calcium instead of steel or wood, and the builder is mother nature, who is sure to do good work if she is given a chance. Ninety-nine per cent of the calcium in the body is used to make the framework firm and strong, for it is deposited in certain spaces in the somewhat softer and more pliable tissue, cartilage, which is formed first and grows rapidly during childhood. If the calcium fails to fill these spaces at the time when nature needs it, the cartilaginous bone will bend under the burden placed upon it.

Recall the number of babies you have seen trying to walk on legs unable to bear the weight of their plump little bodies. It is not calories they lack, but calcium. If you felt of the ribs of these same babies perhaps you would discover that not only the leg but also the rib bones were bending under their burdens, not because the burden is too great but because the bones are too weak. So, too, the reduced pressure in the thorax during breathing may cause the walls to cave in, with a narrow or pigeon chest as the permanent result. For, once bent, all calcium can ever do is to stiffen the bones in their shape, preventing further deformity, though not remedying the evil already accomplished.

If a carpenter or a contractor makes a slight error, he can usually repair the damage, or, at worst, tear down and start over again. There is, however, only one chance to make good in the most important of all building operations—our bodies. A mistake at the start may affect the whole future structure. How many builders would start operations without some idea as to the plans for the structure and knowledge of the materials to be used? Yet the American people are attempting the building of a coming generation with very inadequate knowledge of the materials required. How else could it happen, as Sherman has stated, "that one-half of the American people are suffering from lime starvation," unless it is that they do not realize the importance of this great factor? They would not willfully deprive the next generation of its rightful heritage of health.

Dr. Helen S. Mitchell

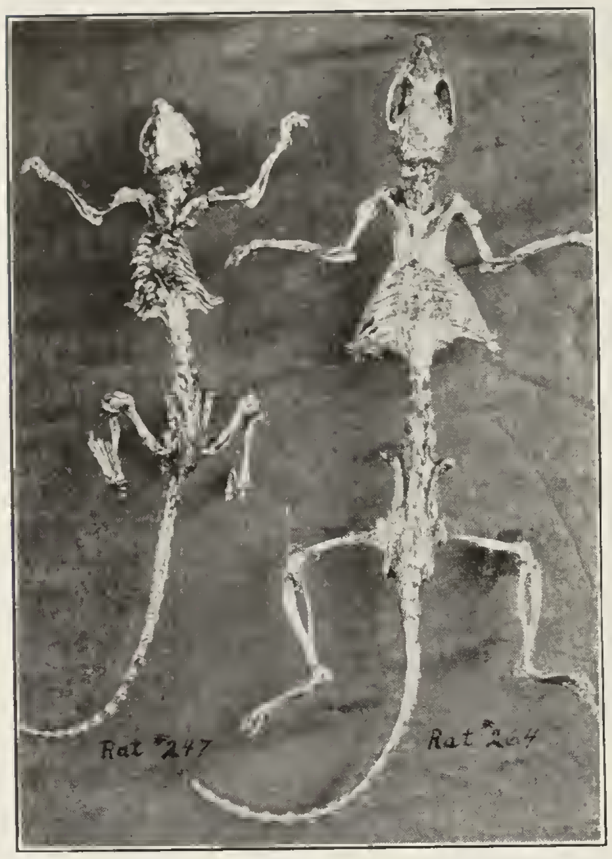
Four Important Functions

Calcium is not a fuel food, it has no caloric value, but it constitutes three-fourths of the mineral content of the body and has four very important functions:

1. It gives solidity to bones. The amount of lime in the bones is so great that a burned bone retains its form even after the animal part has been wholly destroyed.
2. It helps to maintain muscle tone; without calcium the muscles become flabby and weak.
3. The small amount of calcium in the blood has a stimulating influence upon the heart muscle and is absolutely essential to maintain the normal beating of the heart.
4. The calcium in the blood is also necessary to enable the blood to clot as a protection in stopping the flow from a wound. Before an operation calcium salts are sometimes given to shorten the clotting time.

We do not become conscious of calcium deficiency in the three latter capacities because the body apparently can use all the available calcium to the best advantage. Voit fed pigeons on a "lime-deficient" diet, and on killing them found that the leg and wing bones contained the normal amount of lime, while the bones of the head were almost wholly deprived of lime. Evidently the body had sought to maintain the normal blood content of calcium by robbing those parts of the skeleton from which it could best be spared.

The farmer or stock breeder frequently knows more about the feeding of his cattle than of his children. Animal tissue, be it that of a dog, a rat, a cow or of man, has very much the same chemical composition, and the laws which hold true in one case apply with slight modifications to the others. Compare, for instance, the specialized function of milk production in cows and in the human mother. The farmer feeds his milch cows with



Skeletons of Rats Shown in Figure 2

particular reference to milk production and even then frequently fails to meet the tremendous calcium requirement of "heavy milkers." It must be remembered that milk is one of the richest "lime feeds." After a long milking period a cow may break a leg or, without apparent cause, completely collapse while standing in the stable. The calcium supply of her bones has been so entirely exhausted as to leave an insufficient support. Dairymen who are feeding for milk production have had remarkable success in the use of bonemeal, lime and other inorganic sources of calcium fed to cows along with green foods, ensilage, and grains. An increase in the quantity of milk, improved general condition of the animal, and remarkable improvement in the bearing and raising of young have resulted.

Such experience cannot fail to impress us if we are willing to face the facts; neither can the experimental results obtained by feeding rats of the same litter on diets with and without an adequate supply of calcium. Poor, emaciated, dejected and deformed; what a striking contrast to the animal of the same litter whose food was similar except for an increased calcium content. And even more convincing is the contrast afforded by the condition of their skeletons. Stunted growth, curvature of the spine, deformed ribs resulting in reduced lung capacity, enlarged joints, and poor teeth are the conspicuous factors in the toll demanded through one deficiency—calcium. X-ray plates also bear evidence of the same results, and in addition show that even after calcium has been added to the diet recovery may and probably will be only partial, leaving permanent rib and back deformities as well as slightly bowed legs.

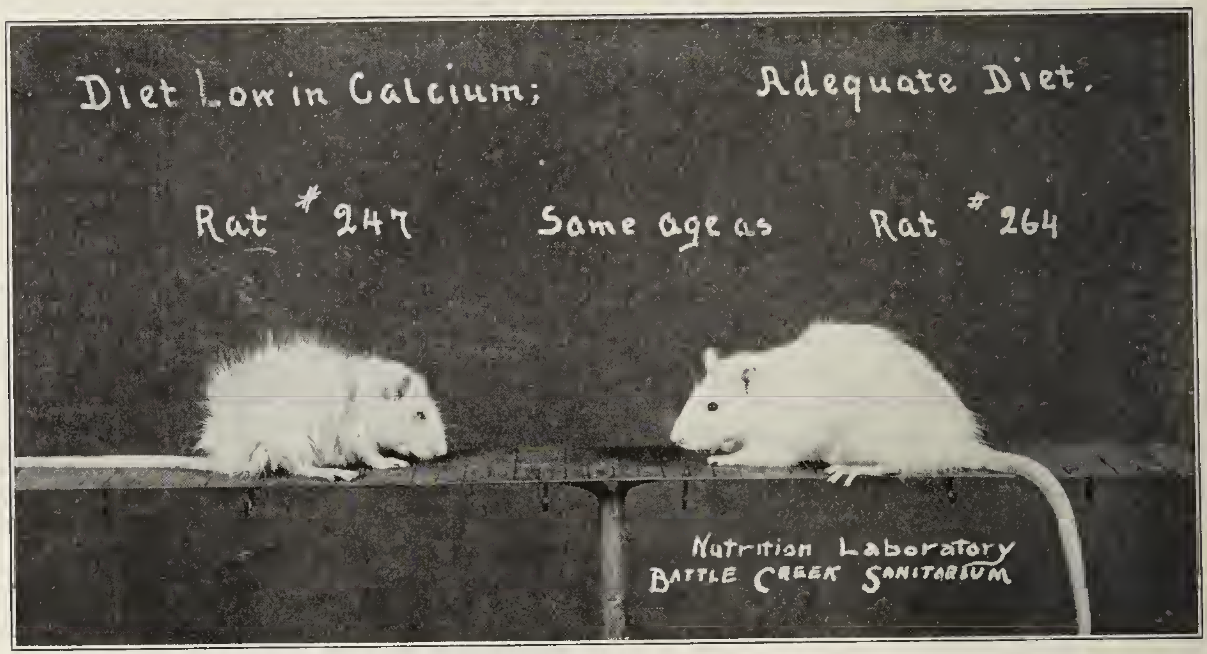


Figure 2 Showing Effect of Low Calcium Diet

If calcium is supplied in abundance from natural food sources such as good whole milk, unrefined grains, and green vegetables, and if the other factors, such as sunshine, fresh air and hygienic surroundings are present, there need be little fear of bone-deficiency disease.

The greatest need for calcium is during periods of rapid growth and when there is an increased demand because of lactation. However, calcium is also required by the adult for the repair of worn-out tissue and as a normal blood constituent, but obviously in much smaller quantities. Evidence that many pregnant and nursing mothers are paying dearly for their lack of attention to the calcium content of their diets is afforded by the report of the dentists that there are more cases of dental caries among pregnant and nursing mothers than among any other one group of people, except perhaps the children of these mothers. Nature seems to provide that young shall not suffer by drawing, if need be, upon the bones and teeth of the mother for necessary supplies.

As just stated, up to the present time it has been assumed that the young were entirely protected from calcium deficiency at the expense of the mother. Recent observations, however, seem to indicate that some children are born with a predisposition to rickets because of faulty parental nutrition, and frequently these unfortunate individuals are nursed by mothers whose milk is of poor quality for the same reason. A deficiency in the mother thus prevents an adequate storage of the same element in the offspring, with a consequent lessened resistance to disease in which that factor is especially involved.

Infants and young children require two or three times as much calcium in proportion to their weight as do adults. Their teeth are the first tissues to bear evidence of deficiency disease, because we cannot see the bone condition except by means of x-ray. The astounding figures given by the dental clinics regarding the occurrence of decayed teeth among the younger school children, especially our native American children, should certainly stimulate us to action. In one city, by educational preventive treatment, decay was reduced 67 per cent in six years, thereby proving that this is not a mere theoretical proposition.

The average American dietary of meat, potato, white bread, butter, and sugar, with a minimum of milk and vegetables, is notably low in calcium as well as in some of the other minerals and in vitamins. On such a diet rats develop characteristic rickets. Milk and milk products rank first among the list of high calcium foods —milk contains more calcium than an equal quantity of saturated lime-water—and yet how frequently one sees a pint of milk delivered to a family where there are several children. In the accompanying table a few common foods are listed in the order of their calcium content. Note where the chief articles of the average American dietary occur in this list. It must be remembered however, that certain foods are habitually consumed in larger quantities than others and thus actually provide a greater supply of calcium than an apparently richer source.

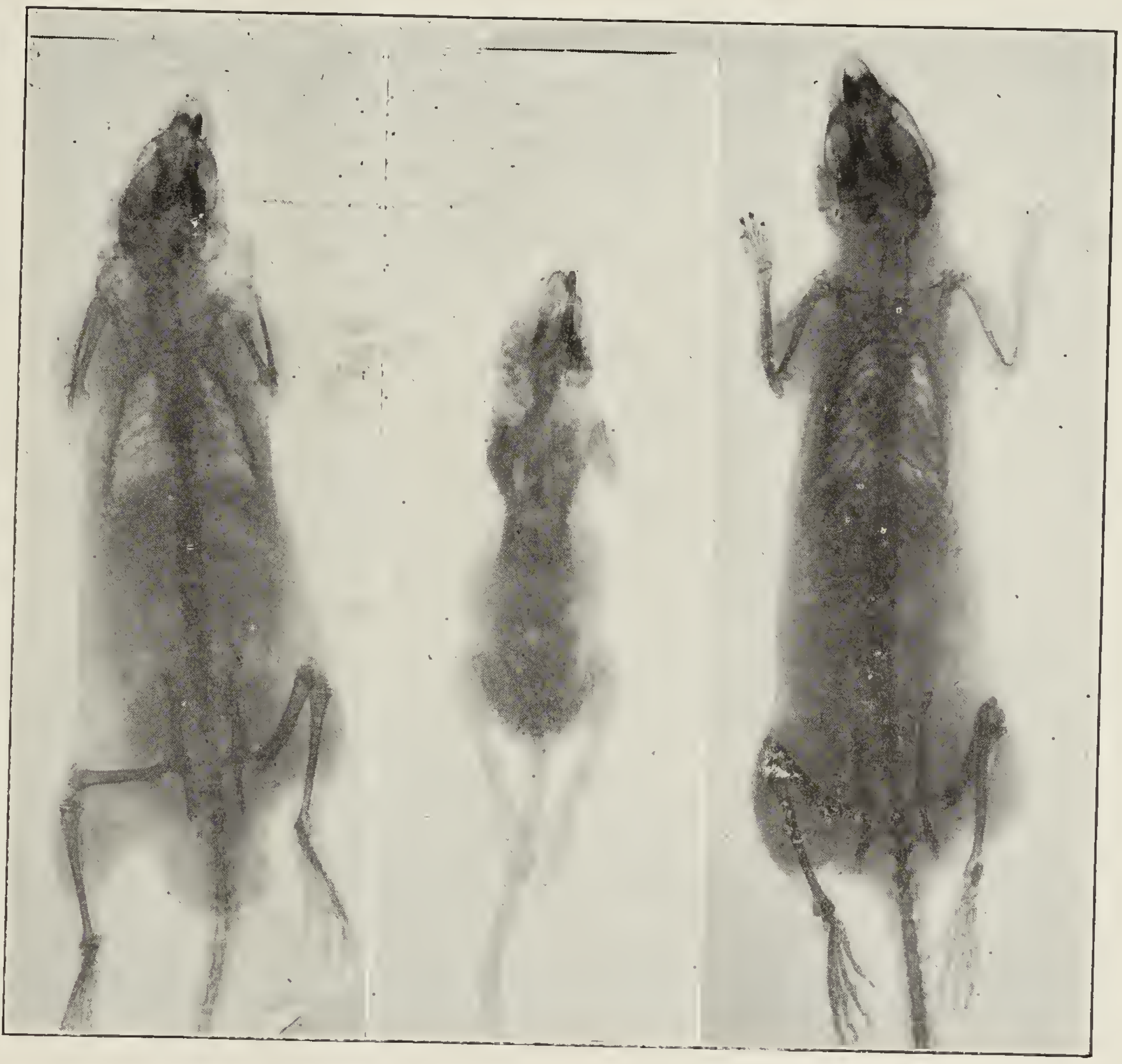
It is an interesting fact that the foods rich in calcium are invariably in their natural state or have been merely dried by evaporation; not one has been through any refining process. Of the foods low in calcium, several have been subjected to so-called purification processes for the purpose of producing the finer texture or the lighter color which the public wrongly believe to be an improvement. Compare, for example, the calcium content of granulated sugar with that of molasses made from the same sugar cane. In refining cereals the miller removes the bran and the germ, in which the larger part of the mineral is found and sells it as cattle feed, leaving for human consumption that white inner portion devoid of minerals and vitamins and lacking the richer flavor. The housewife, herself, under modern methods of cookery usually succeeds in extracting and discarding these elements from vegetables. Peeling removes part of the vital elements, boiling in water extracts most of the remainder of the minerals, and then the water is poured down the sink.

These are only a few examples of the reason why our pregnant and nursing mothers suffer from bone disease and decayed teeth, and why our little folks are not building the firm, strong bodies which they should have. What is the remedy? A more universal knowledge of food values and care in planning menus. Compare the calcium content of two relatively similar menus, one furnishing less than half, the other more than double the daily calcium requirement of 15 grains for the adult. And a child needs relatively more calcium per pound of body weight than an adult because the bones are still growing. The difference in these menus is chiefly in the amount of eggs, milk, milk produsts and nut meats used in rooking, and the substitution of whole grains for the milled products used in breads and cereals. An excess of calcium can do no harm. It provides a factor of safety which is always advisable in human nutrition, and extremely advantageous in such a disease as tuberculosis.

Milk in some form is perhaps the most reliable of all sources of food calcium. A pint of milk contains 12 grains of calcium, and 20 ounces of whole milk will supply a day's requirement. Skimmed milk is even richer in calcium than whole milk and should not be considered a waste product in the dairy or creamery. In the use of milk man adapts to his own use the choice calcium salts which the mother cow has laboriously garnered from the fields and meadows and prepared in concentrated form for her calf. Milk should not be considered merely a beverage but a food of superior value. Therefore, let us make "A quart of milk a day for every child" our slogan to improve the health of the American child.

	(grains per ounce)
Cheese, cream	5.7
Cheese, yoghurt	4.28
Cheese, cottage	4.18
Mustard greens	3.0
Turnip tops	2.12
Beans, soya	2.0
Hazelnuts	1.75
Almonds	1.46
Molasses	1.29
Watercress	1.15
Figs	0.99
Beans, dry navy	0.98
Egg yolk	0.84
Bread, Boston Brown	0.79
Cauliflower	0.753
Olives	0.747
Wheat bran	0.735
Milk, whole	0.735
Maple syrup	0.655
Walnuts	0.545
Pecan nuts	0.545
Currants, dry	0.503
Celery	0.478
Rutabagas	0.453
Eggs, whole	0.430
Oatmeal	0.42
Spinach	0.41
Dates	0.398
Raisins	0.392
Turnips	0.392
Carrots	0.343
Prunes, dry	0.331
Raspberries	0.300
String beans	0.282
Cabbage	0.276
Oranges	0.276
Strawberries	0.251
Onions	0.208
Beets	0.178
Graham bread	0.176
Peas, green	0.171
Macaroni	0.135
White bread	0.092
Butter	0.092
Egg whites	0.092
Potatoes	0.086
Cornmeal	0.072
Watermelon	0.067
Tomatoes	0.067
Beef steak	0.057
Rice, polished	0.055
Sweet corn	0.037
Corn starch	trace
Sugar, granulated	0

Average Daily Requirement, 15 Grains



Rat 339 of same age as rat 342
5 weeks' experiment

Rat 342 after 11 weeks
on adequate diet

BREAKFAST	grains
Grapefruit	0.7
Corn flakes	0.14
Cream (2 oz.)	1.3
Sugar	0
Bacon	trace
Toast (white bread)	0.2
Butter	0.09
Coffee	0
LUNCHEON	
Macaroni and tomato	0.34
Vegetable salad—	
Beets	0.14
Potatoes	0.04
Cucumbers	0.10
Mayonnaise	0.06
Rolls (2)	0.2
Butter	0.09
Fruit Ice	0.05
DINNER	
Steak (6 oz.)	0.3
Potatoes (4 oz.)	0.3
White bread	0.2
Butter	0.09
Peas, Greens	0.7
Apple pie	0.25
Total Calcium per day	5.74

BREAKFAST	grains
Oranges	1.4
Oatmeal	3.0
Sugar	0
Whole milk (2 oz.)	1.57
Egg (1)	0.44
Whole wheat toast	0.38
Cocoa (all milk)	3.7
Butter	0.09
LUNCHEON	
Macaroni and cheese	6.84
Lettuce and boiled dressings	0.9
Whole wheat muffins	0.5
Butter	0.09
Prune whipe with cream	0.9
DINNER	
Walnut roast and white sauce	1.2
Mashed potatoes	0.36
Whole wheat bread	0.38
Butter	0.09
Mustard greens	9.0
Custard pie	3.2
Total Calcium per day	33.87

Simplification and Standardization

A Survey of Recent Work Which Has Been Done in a Movement Toward Industrial Stability

By E. W. McCULLOUGH

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A PREVIOUS article discussed, "The Three R's in Business," which were stated to be statistics, simplification and standardization and cost accounting. In this issue the second "R" will be dealt with more in detail.

In view of the premise stated in the title of this article, it might be advisable to briefly trace the history of industrial simplification and standardization. Of late much has been said about this movement and the extent to which it tends to reduce our industrial waste. The fact that this avoidable waste consumes an alarming percentage of our dollars has been given some publicity. Moreover, mention has been made of those elements largely responsible for the conditions contributing to the waste. In other words, considerable has been said and written about certain of our industrial shortcomings and their very definite effects on the various elements involved.

The efforts to eliminate production and distribution wastes through simplification and standardization are not new; in fact, Alfred Marshall in "Industry and Trade" tells us that in 1672 the Dutch shipbuilding industry was operating along simplified lines. One community were specialists in the building of keels, another of ribs, another of beams, and so on. These shipbuilders adhered mainly to one pattern for ships of 100 tons and another pattern for ships of 500 tons. Carriage being easy the different parts of a ship could be ordered from these various specialists and readily assembled at a central point. Thus we see that specialization and repetitive processing is at least 250 years old.

Mass Production Highly Developed Here

The science of mass production has unquestionably been developed to a higher degree in America than elsewhere and simplification has been followed for years by many of our industrial establishments. This has been due to the fact that this country has been instrumental in the development of industrial machinery.

Notwithstanding that simplification had been practiced for years, the potentialities of the movement were first prominently brought before our manufacturers during the war by the Conservation Division of the War Industries Board. It was apparent at the time that to meet the tremendous production demands there would of necessity have to be a vast conservation of men, materials and effort, and as a real means to that end was the determination to eliminate all duplications and needless varieties from commodity lines. The effectiveness of operating under the reduced wartime schedules adopted by the manufacturers needs no review. It should be observed, however, that this occurred under the stress and compulsion of war. Therefore upon the withdrawal of restrictions many slipped back into the old order of business based primarily on the fallacious policy of "we make what our customers want."

Thus upon the departmentalization of the United States Chamber of Commerce some three years ago, the Fabricated Prduction Department undertook as one of its major activities the promulgation of industrial simplification and standardization as a constructive peace time activity. Sometime later efforts were joined with the division of simplified practice, organized under the Department of Commerce by Secretary Hoover. This department of the National Chamber already has had contact with some 350 various industries and very encouraging progress can be reported.

In 1921 a committee of engineers appointed by Secretary Hoover made a quantitative investigation of the waste in industry. Six major industries were studied and the report showed that the avoidable waste was from 29 per cent to 64 per cent, averaging approximately 40 per cent. Many are prone to discount the findings of the professional engineer, but if the report was only half right we still have a figure of 20 per cent as our average industrial waste. Fabricated production in this country during 1919, according to census reports, reached over sixty billion dollars. Therefore, as a measure of our avoidable industrial waste we have the fabulous sum of twelve billion dollars.

It is appreciated that many factors contribute to this waste and no one element is responsible for all. We are told, however, that one of the most outstanding wastes chargeable to management is over-diversification and lack of standardization.

Excess Variety Burdens Industry

It has been observed in our study of a great many industries that there is practically none which is not more or less burdened by excess variety. The pyramiding of sizes, styles and types has been the result of not the consumer's demand as much as the overambitious sales force. It is not reasonable to presume that the ultimate consumer looks with equanimity upon a situation wherein he pays a premium for needless varieties and lack of reasonable standards. A natural presumption would seem to be that the vast majority of purchasers would be content to exercise their discrimination between say 10 to 15 varieties instead of 100 to 150, as exists in many lines.

It was mentioned previously that very encouraging progress could be reported and noteworthy results had been achieved in many industries. Within the last few weeks varieties of wire field fence have been reduced from 552 to 69, representing an over all reduction of 87 per cent. This simplification carried along with it a reduction in packages from 2072 sizes and styles to 138, or a 90 per cent elimination. Then again the large saw manufacturers have during the past few months effected a very substantial reduction of handsaw varieties, one concern reporting a reduction from 660 to 203.

As would naturally be supposed, the style element militates to a certain extent against any attempt to reduce varieties or simplify, yet many outstanding programs of variety elimination have been carried out in the so-called style lines. Take shoes, for instance. There is probably no commodity line which is more beset with varieties. Yet one of our large manufacturers has recently reduced his line of shoes from 2500 varieties to 100, which is an elimination of 98 per cent. Contrary to the general belief this policy has materially increased rather than decreased his volume of sales. Furthermore, the tremendous savings which have accrued to him through the reduction of his production wastes have been passed on to the ultimate consumer, who now receives a high grade shoe for a considerable reduction in price.

There are many other striking examples of simplification which could be cited. Some have been brought about by individual manufacturers, others through cooperation of an entire industry. Of much significance, however, is the fact that these reduction schedules have been carried out in lines of every description from cigars to farm implements.

Simplifying the Container

Simplification and standardization, however, does not end with the completed product; in fact, many lines are not amenable to simplification and manufacturers of these are finding it worthwhile to bring about a simplification of such items as cartons, containers, packages, labels, accessories, purchased parts, grades, colors, brands, finishes, terminology, specifications, etc.

As to how a simplification program may be carried out, several methods suggest themselves, namely: through individual efforts, through trade associations, by unorganized industries, and by law. All of these methods have been used successfully, there being no measure of their relative effectiveness. Manifestly the conditions within an industry govern the proper procedure to be followed. A large number of individual concerns have themselves eliminated the non-essentials and duplications from their respective lines and are blazing the trail for their competitors.

Wherever possible, this department of the National Chamber has directed its efforts towards securing a cooperative simplification movement within an entire industry through its trade association. It has been conclusively demonstrated that simplification and standardization is one of the most constructive activities in which a trade association can engage and a large number have already brought to their members the benefits and economies of a simplified line.

Then there have been several instances recorded where manufacturers not organized into a trade association have come together, under the direction of the National Chamber and the Department of Commerce, to cooperate in working out their elimination programs and some far-reaching results have been achieved.

The fourth method while effective is not always the most desirable method of simplifying a commodity line, yet some substantial economies have been brought to a number of industries in reducing varieties and setting up standards through federal legislation. One of the most constructive enactments was the Standard Container Act of 1916, which reduced varieties of certain types of baskets from 78 to 11. This legislation had in view not only the economic soundness of simplification and standardization but the protection of the consuming public from misrepresentation.

Arbitrary Action Not Suggested

It should be observed that the procedure advocated by both the National Chamber and the Department of Commerce does not suggest arbitrary action upon the part of the manufacturers; in fact, it has been our observation that the most successful results are secured when a simplification program has been developed through the cooperation of the manufacturers, distributors and consumers. Under the auspices of the two departments here in Washington many simplification conferences have been held. It has been the invariable procedure that to these conferences were invited representatives of the various elements interested and any action taken, therefore, had the support and endorsement of the distributor and consumer, as well as the producer:

To the manufacturer, some or all of the following gains and economies will accrue from a simplification undertaking:

1. Less capital tied up in
    - Raw and finished materials
    - Tools and equipment
    - Storage space
2. More economical production through
    - Longer runs
    - Better planning
    - Less defective work
3. More efficient labor due to
    - Repetitive processes
    - Simplified training
    - Permanent employment
    - Opportunity for wage incentives
4. Better service to trade
5. Concentration of sales effort
6. Decreased overhead
7. Fewer shut-downs
8. Better product
9. Increased turnover

Container Standardization

Just what the possibilities of simplification are in the food products line can best be determined by those most closely in touch with conditions. It would seem, however, that the matter of container standardization would be of interest. Then again, the standardization of grades and qualities should be vitally important. Quality standardization, while in a measure tied in with simplification, is a distinct study within itself. Its application is possibly not as widespread as simplification, but it is a movement that is being given countrywide attention at the present time. In a great many industries quality standardization is being supplemented by a certification and inspection service. This certification of quality has been the means of materially raising the grade of many commodity lines.

There has been and still is considerable confusion in the minds of many as to the difference between simplification and standardization. Simplification is based primarily on commercial expediency and not like standardization based on technical and scientific considerations. This does not mean that simplification is arrived at through "grab bag" or "hit and miss" methods, but sound commercial practice, together with a record of past performance, is sufficient to carry out a simplification program. Simplification obviously precedes scientific research and standardization and manifestly is the proper starting point.

Standardization like simplification in no way implies a stifling of individuality or initiative. Rather development and progress within an industry are materially enhanced through reasonable simplification and standardization, inasmuch as efforts can be concentrated on fewer lines.

It is the desire of the National Chamber and the Department of Commerce to cooperate with manufacturers in their efforts to eliminate waste through simplification. The services of both organizations are available to any manufacturer or group of manufacturers who see in simplification and standardization a means towards stabilizing industrial conditions.

A Valuable Merchandising Service

The Milwaukee Journal through its merchandising service bureau has collected a quantity of data of great value to the food manufacturer. The methods used in securing the information are well worthy of attention as illustrating the value of a properly conducted questionnaire in following up a publicity program.

In this case questionnaires were answered by 9,000 Milwaukee consumers, representing a true cross section of the 122,694 families in the Milwaukee market. The answered sheets were returned in person or by messenger, each one being checked and corrected before it was accepted, thus insuring the greatest possible accuracy.

The results of the survey are compiled in six volumes, the one giving the analysis of the packaged grocery product being of particular interest to the food manufacturer. Questions were asked as to whether bulk or packaged products were used, what brand was used, what kind was preferred, and the approximate amount used in one month. The products upon which this information was secured are as follows: coffee, coffee substitutes, tea, cocoa, breakfast foods, flour, prepared cake flour, pancake flour, baking powder, macaroni products, butter substitutes, cornstarch, shredded cocoanut, chocolate, flavoring extracts, salad dressing, catsup, pork and beans, mustard, canned milk, canned soups, sirup, gelatine desserts, chocolate malted milk, mince meat, jams and jellies.

A comparison of the amount of certain commodities used in 1922 and in 1923 revealed some very interesting facts regarding the value of certain kinds of publicity. Charts showing the number of families using a product as compared with the number of non users, are very enlightening. In some cases it was discovered that a large per cent of the consumers of a commodity purchased it by name and did not have any idea what brands they were using.

THE CONFERENCE TABLE

"Toast For Breakfast"—A Campaign Slogan

Many Agencies Cooperate To Put More Bread On The Breakfast Table

By L. A. RUMSEY, Ph.D.

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THE American food industries are watching with a great interest the writing of a new page in the history of food publicity. The national "Make Toast Your Breakfast Food" campaign differs from familiar food campaigns in its breadth and soundness of conception, in economic object and in method of attainment. It has become a cumulative movement, gathering to its support many interests which are apparently as widely diversified as the electrical industry on the one hand and the meat packers association on the other. Behind it all is the absorbing story of toast.

The American Institute of Baking, under the direction of Dr. H. E. Barnard, has ever since its foundation in 1920, been concerned with the low consumption of bread in the American diet as compared to other bread eating countries. Now we are soundly advised by no less an agency than the National Wheat Council to eat an extra slice of bread at every meal. As a nation we are governed in our eating by the appetite appeal, so far as our pocketbook will permit. The best way to improve the flavor of bread, to create the appetite appeal, is to toast it. A thorough study of toast has been made in the American Institute laboratories. Every kind of toast, from every kind of bread, made with every type of toasting appliance, both electric and gas, has brought out some facts about toast not generally known.

The modern baker has skillfully, scientifically blended with his flours the flavors of rich milk, pure sugar and salt, snowy shortenings, golden malt sirup, and the elusive products of yeast fermentation in just the right proportion to emphasize that satisfying wheaty taste which only bread can give.

There is a greater difference in toast than is apparent in the bread from which it is made. To toast a slice of bread is to develop and bring out the individual flavor of each ingredient and then to seal it in. The sugars in the outside layers of the honeycombed crumb are carmelized and their flavor improved. The tiny shreds of gluten, life sustaining proteins of the wheat which bound and held together the loaf structure, are parched and roasted into crispness. Baked into this is the desired flavor of the milk with a little salt to lend it character and a little shortening to keep it tender. The moist tender crumb absorbs and holds the flavors, imprisoned between two crisp golden walls.

Good toast is like good steak. The nutritious juices, the characteristic flavors of the meat are sealed in by searing first on one side then on the other. The tender meat proteins can then be slowly and properly cooked in their own fluids without loss. Likewise with toast.

L. A. Rumsey, Ph.D.

The first color showing on the side indicates that the flavors you want to save are being driven further into the moist interior and a wall of baked crumb has sealed up that side. The slice is immediately turned and the other side is also sealed. Then the toasting continues, slowly, until only a third of the interior bread remains, a little drier than before, but many times fresher and holding the wheaty flavor sandwiched in between the other two-thirds of newly formed golden brown crispy crust.

It should be buttered quickly, while hot. The proper way to make perfect toast is at the table if possible. Watching it, smelling it, anticipating its goodness, stimulates the appetite. The electric toaster furnishes a convenient way of making appetizing toast.

Upon investigation it was found that almost none of the toasters on the market were designed to make a perfect toast from the average slice of bread. Their heat capacity was too high, burning, scorching, carbonizing the outside surface instead of properly toasting the bread. Moreover, these toasters were all too small to handle the slice from the standard bakers' pound and one-half loaf. One by one the manufacturers have become interested in the problem of rebuilding their old models or designing new toasters which would make a perfect toast from either small or large slices of bread. There are now eleven of these new improved electric toasters on the market which the American Institute of Baking has found to meet its standard requirements and which have been recommended as making perfect toast. This number represents the selection from a total of forty-five different appliances, manufactured by twenty different companies.

Another discovery was that only 12 per cent of all the wired homes in America had an electric toaster in them. This means over nine million breakfast tables which the electrical industry has not yet supplied with a device for preparing perfect toast. Domestic surveys have shown that a good toaster is a valuable part of the culinary equipment in a home, leading the family to appreciate the satisfying food value of better toast with the increased consumption of better bread. So great an opportunity for increased use of wheat products and greater business for the electrical industry immediately aroused the interest of everyone concerned. Building on this basic idea the American Institute of Baking developed and launched a great national campaign to promote the more general use of toast by stimulating the wider sale and distribution of toasters.

Electric light and power companies seized upon the plan as a means of promoting the public acceptance of electrical convenience appliances and the greater use of current.

Everywhere campaigns are being organized on a cooperative scale. The baker is popularizing the value of his bread for toast made electrically on the breakfast table. The electrical dealer and the public utilities station are advocating bakers' bread for toast. The butter dealer, the dairymen, the meat packer, the coffee merchant, the cheese man, the manufacturer of jams and other spreads, all see in more toasted bread the carrier for their products. The flour miller recognizes in the toast campaign one direct way of materializing the slogan of "Eat More Wheat." The advertisers, local or national, are glad to use the new idea in presenting their particular food products as a part of the logical picture of a normal meal, built around bread or toast. Everyone is benefited by the public interest aroused, the ultimate consumer most of all. Many more electric toasters are sold with special price inducements resulting in the increased sale of bread for toast.

The millions of homes not supplied with current are to be reached with efficient gas toasters, designed and improved with the assistance of the gas and service companies.

For the first time great food industries are marshalling their forces around a common slogan under the banner of the American baker, each helping the other to find a better market to develop new business, all in the interests of better national health and prosperity.

The Sanitary Food Products Factory

By E. K. BORCHARD

Technical Engineer, Atlas Portland Cement Co.

THE remarkable progress in our ideals of sanitation is likely to be overlooked, unless we deliberately think back over the past few decades and consider the way in which our everyday lives were conducted. Then the vast difference between conditions of those times and of the present day becomes most impressive. Running water, modern plumbing and a thorough realization of hygienic necessities were, only a short time ago, the exception rather than the rule. In the matter of food, the progress has been particularly marked. Where we then handled our food products from producer to consumer in bulk, unprotected from all sorts of unsanitary conditions, today wherever it is physically possible, food products reach the consumer in one form or another of sanitary package.

Perhaps the greatest advance in the preparation and handling of foods has been in the improved sanitary and hygienic conditions in the food factory. In years gone by most owners of such factories would have long hesitated, and perhaps finally refused to allow any visitor to inspect the factory and the process of food preparation. Today this is so much changed that inspection is sought for and invited in order to demonstrate to the public the sanitary conditions of the factory and manufacturing processes.

The improvement in buildings and building methods has played no small part in this felicitous result. The natural tendency of building in a rapidly developing country is to build temporarily to fill the immediate pressing needs. So it was in America, but we are now passing out of this stage of our development and turning towards buildings which are to render service not only for today but for the future.

Requirements for Ideal Food Factory

Sunlight is the greatest enemy of bacteria and dirt. It is far easier to keep clean and sanitary a building which is flooded with daylight than one in which dark corners afford a lurking place for dirt, germs and vermin—therefore, the ideal food factory should have the maximum of daylight.

Frequent and thorough cleaning must be made possible by constructing the building and all equipment of materials which can be easily and thoroughly cleansed; if necessary, by hosing down with water, and a thorough scrubbing.

Joints, cracks, and corners afford a lodging place for insects and rodents so that the ideal building would have as few such spots as possible.

Reinforced concrete construction fulfills all these requirements to the greatest degree. The window area in this type of construction is the maximum possible, in fact the entire wall area may be practically filled with window sash. Such large window areas often reach as high as 85 or 90 per cent of the wall area. This great window area reduces the lighting charges materially and in many cases make artificial light almost unnecessary. The glass sash extends to the ceiling height so that the light will reach 40 or 50 feet into the building in an efficient manner. The reason that such large window areas are possible is that a reinforced concrete building is practically a self-supporting skeleton with the floors resting on interior and exterior columns, so that the walls do not bear any of the weight. Therefore, the function of the windows and curtain walls is merely to keep out the elements as the walls sustain no loads whatever.

For the greatest ease and thoroughness of cleaning, the ideal factory would be lined with a seamless white and glazed surface like a huge china dish. Of course this is not possible, but concrete affords the nearest practicable substitute. The properly constructed concrete building might be said to have no joints since to all intents and purposes it is one great monolith. Concrete is not affected by water—in fact, a concrete kept constantly wet is often improved in strength and quality. A concrete surface may be finished to a smoothness closely approaching that of glass or china, so that it can be scrubbed and cleaned with the greatest ease and efficiency.

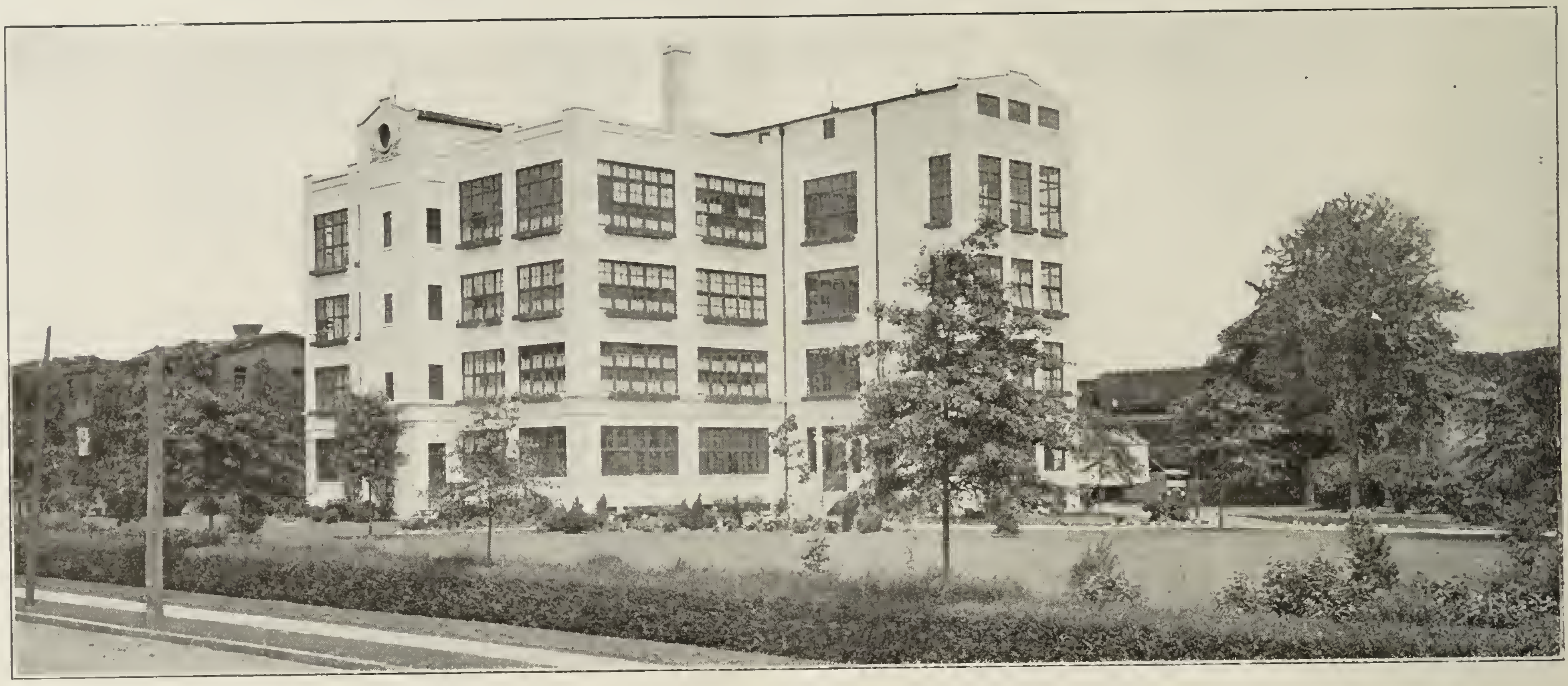
Concrete floors are the last word in sanitation—in fact, many states have laws prescribing them for dairy barns, creameries and similar buildings. As far as the building itself is concerned, there is no reason why the floors and walls cannot be daily flushed with a stream of water because there will be no leakage to the floors below. No matter how carefully a wood floor may be laid, there are sure to be cracks in it and even the most thorough scrubbing will not render it absolutely clean.

The thought of insects, rats and other vermin in our dwelling houses is sufficiently repugnant, how much more so is their presence in the places where our food is prepared. And yet in the older types of building construction it was almost impossible to be sure of their absence. Wooden floors with boarded-up spaces around joists, afforded harboring places for all sorts of vermin, no matter what crusade was carried out against them. Joints in the walls and plaster were sure to be lurking places for insects.

In the concrete food factory there is none of this because the floor is of one piece with the walls, and there are no closed-in spaces and a total absence of joints and cracks. The junction of walls and floor, instead of making a corner hard to get at, can be made with covered or rounded surfaces to make cleaning easy. It is difficult to estimate the losses from vermin in the older types of building. One paper goods manufacturer has stated that his concrete building saves him $5,000 a year on this item alone, and it is safe to say that in a food factory the loss would be even higher.

Finishing Interiors of Food Factories

We always associate a white surface with cleanliness and sanitation, probably because dirt or unsanitary conditions show up so plainly on a white surface. The ideal surface for the interior of a food factory would be a highly glazed white tiling. Naturally this is too expensive to be practicable in a large building so that some other material must be used. Concrete buildings are finished in two ways to



Concrete Factory of Wheatena Company, Rahway, N. J.

give the white appearance so desirable. The ordinary appearance of concrete is a light gray and for all ordinary uses this is quite satisfactory. Where a pure white color is desired, it may be obtained by the application of one of the special white paints made for applying over concrete surfaces. This will give a smooth surface of pleasing color. One of the disadvantages of this method of finishing the interior of factories is that the paint may be chipped off by careless workers, must be periodically renewed, and will not indefinitely stand up under the constant washing and scrubbing which a food factory should have.

Ordinary white plaster used for the interior of dwellings and office buildings gives a pure white finish but one which cannot be scrubbed or flushed with water. Where a permanently white surface is required, it may be obtained by the use of a white Portland cement which gives a pure white mortar and when plastered on the walls and ceilings gives a covering which is exactly the same as the regulation gray concrete in that it can be scrubbed and flushed with water. It is, however, pure white. Even though seriously discolored, it can in most cases be brought back to its original whiteness by a thorough scrubbing or if this will not remove all discolorations, by an acid-solution washing which dissolves an infinitesimal film off the surfaces, revealing the original whiteness underneath.

The advantages of concrete buildings briefly described above, are of primary interest to the readers of THE AMERICAN FOOD JOURNAL, but of course there are additional advantages which apply to a factory used for any industry. The best proof of the realization of the many advantages of concrete factories is the fact that this type of construction has almost supplanted the older types.

Research Improves Canning Methods

Commercial canners are finding the research laboratory of the National Canners' Association a very valuable source of information concerning canning problems. A recent report issued by Dr. W. D. Bigelow gives some correspondence with commercial canners which illustrates the type of problems that are brought to the laboratory for solution.

Those who have not made a study of bacteriology often have the impression that there are certain critical temperatures that must be reached in order to sterilize foods. They are therefore inclined to ignore the early stages of the process and consider only the sterilizing value of that portion of the process during which the temperature at the center of the can reaches its highest point. Looking at the matter from that point of view they naturally desire information regarding how long it takes after the steam is turned on in the retort for the temperature of the center of the can to reach what they consider a sterilizing temperature, and how long the process should be continued after that time.

Much information is requested concerning the processing of corn, one of the most difficult of all products to can. Dr. Bigelow states that as a matter of fact it is not possible to entirely sterilize corn. There is a very great difference in the resistance of individuals of the same variety of bacteria to heat. Some of the thermophiles are so resistant to heat that a process that would destroy them would make the corn unmerchantable. The best that can be done is to use a process that will destroy as many of the bacteria as possible—a process that will destroy all but a few of the most resistant thermophiles and then take care that the corn is not stacked in the warehouse until the average temperature of the can is below 100 degrees F. Thermophiles do not grow at this temperature, or at least it requires two or three years for sufficient growth to take place to cause the spoilage of the corn. The important thing is to destroy bacteria which will grow somewhat readily at temperatures below 100 degrees F.

Some canners make a practice of first heating the cans in boiling water for a certain period, but according to Dr. Bigelow this adds very little to the efficiency of the process. Corn filled at approximately 200 degrees of course cannot have its temperature changed greatly by boiling water, and any change that is made would be very slow. Water does not transmit heat to the can any more rapidly than steam at the same temperature. The time of heating at 212 degrees may therefore be considered as practically lost from the standpoint of sterilization. It would be better to turn the steam directly onto the retort.

It makes no difference whether the cans are heated in dry steam or partly or entirely submerged in water. Even in dry steam a film of water is always condensing on the outside of the can, which amounts to practically the same as if the cans were entirely submerged. Moreover when steam is turned directly into the retort the latter can be heated up more quickly.

Several processes for corn are suggested by the National Canners Association as the result of a great deal of work which has been carried on in the research laboratory. The methods suggested take into consideration variations in the retort and in fact all kinds of variations.

CONVENTION NEWS

Specialty Manufacturers Meet In Minneapolis

Fifteenth Annual Convention Indicates Strength Of Association

The fifteenth annual convention of the American Specialty Manufacturers' Association was held in Minneapolis, September 26-28. The following officers were elected at the final session: President, W. W. Frazier, Jr., Franklin Sugar Refining Company. First Vice-President: F. D. Bristley, Royal Baking Powder Company. Second Vice-President: R. R. Clark, Aunt Jemima Mills Company. Third Vice-President: F. E. Barbour, Beech-Nut Packing Company. Treasurer: D. O. Everhard, Ohio Match Company. General Secretary; H. F. Thunhorst. Directors: J. Graham Wright, Jos. Tetley and Co., New York City; B. F. Amos, Nestle's Food Co., New York City; A. E. Phillips, Welch Grape Juice Co., Westfield, New York; E. F. King, Colonial Salt Co., Akron, Ohio; Fred Mason, American Sugar Refining Co., New York City; Louis McDavit, Colgate and Company, New York City; S. D. Crippen, Bon Ami Company, New York City; C. E. Martin, Baker Food Products Co., Chicago, Ill.; Dr. J. H. Goldbaum, Fels and Co., Philadelphia; Richard H. Bond, McCormick and Co., Baltimore; F. S. Esty, G. Washington Coffee Co., New York City; R. P. Benedict, Lewis Lye Co., Philadelphia.

Under the by-laws the following directors retired and are ineligible for one year: J. T. Williams, Creamette Company, Minneapolis, Minn.; M. J. Norton, Carnation Milk Products Co., Oconomowoc, Wis.; F. H. Millard, Diamond Crystal Salt Co., Chicago, Ill. J. F. O'Brien, Kellogg Co., Battle Creek, Mich.

Interesting Program

Speakers included in the program were: Fred Mason, vice president of the American Sugar Refining Company; Charles Wesley Dunn, counsel of the association; J. W. Herscher, president National Wholesale Grocers' Association; Irving S. Paull, Department of Commerce; J. H. McLaurin, president American Wholesale Grocers Association; Philip A. DePuyt, president National Association Retail Grocers; Dr. Charles A. Brown, chief of bureau of chemistry, United States Department of Agriculture; Victor Murdoch, chairman of the Federal Trade Commission; E. T. Meredith, former secretary of Agriculture; Charles P. Whitman, president Food Brokers' Association; H. C. Balsiger, secretary National Retail Grocers' Association; Anne Pierce, New York Tribune.

The location of the convention at Minneapolis, farther west than it had ever been held before, was an innovation which in no way interfered with its success. The representative attendance and enthusiastic discussions indicated the strength of the association. The character of the discussions emphasized the fact that there really exists very little difference of opinion on the main fundamentals of distributing economics and ethics. Such gatherings will inevitably establish principles so broad that petty offenders will be compelled to fall into line.

The new code of ethics adopted by the convention is given on page 495.

Accomplishments of The Specialty Men

By W. W. FRAZIER, Jr.

President

For many years past we have held our annual meetings in Atlantic City. This year our Western members, headed by that indefatigable worker, Mr. J. T. Williams, induced us to come to Minneapolis. Most all of us have made this long journey, and we are glad we came. We are glad of the opportunity to enjoy the hospitality for which the great Northwest is noted. It is often said of the people of the East that they know more of Europe than they do of this great western empire. It surely behooves us all to know our own country first, and this convention to be held here in the beautiful City of Minneapolis gives the opportunity.

I take this opportunity to extend to the different civic bodies, the newspapers and individuals of this enterprising city, the association's most hearty thanks for all that has been done to make our stay profitable and enjoyable.

Our relations with sister associations, both national and state, wholesale and retail, continue most cordial. We have many problems to solve, mainly effecting distribution, in which all the trinity in trade are interested. Different meetings have been held during the past year and much good has been done.

All of us are affected in the present changed conditions. Higher costs of merchandising leaves no room for waste or inefficiency. We must study with greater care than ever before, the greatest possible economy in management and especially in distribution. The securing of a market and the holding of a customer is, after all is said and done, the hardest and most difficult problem in any business.

The Specialty Salesman

The grocery specialty manufacturer is subject to marketing difficulties that do not confront any other manufacturer. I refer to missionary work of the specialty salesman. It is too often regarded that the taking of the order is the most important work in this transaction. Such, however, is not the case. Of what good is an order unless it reaches the retailer's shelves.

Is it not well for all of us manufacturers to stop and take an inventory and find out to what extent we ourselves are to blame for the large percentage of specialty orders that still never reach the proper place in the retailer's store?

It is this work that has had our association's attention since the very beginning and I take this opportunity to extend to the chairman of our merchandising committee, Mr. F. D. Bristley, the association's most sincere thanks for all that he has done. Mr. Bristley has freely given of his time and his energy to bring about better conditions.

No association can do the impossible. We are constantly reminded from different sources that the manufacturer in his anxiety to produce is not without fault. Gentlemen, let us at all times remember that greed for volume without a sound economic and quality foundation fills the business graveyards.

Let us not expect the impossible from our distributors. Let us work with them in every way possible. Let us remember that the wholesale grocer is human, that he wants all the good business he can get and that he will give such business proper attention.

The retail grocer is a merchant and the many successes in the business clearly indicates that on the whole he is a successful one. The retailer offers the greatest possible avenue of reaching the consumer for the many prod-

(Continued on page 494)

EDITORIAL

"An Old Dust Storm Shaken Down To Rest"

"AN old dust storm shaken down to rest."

In such striking phrase does "Baking Technology" in the issue of September 15 comment on recent and ever-increasing evidences of a disposition on the part of the food trades to get together.

To the recent convention of the American Bakers' Association at French Lick, Indiana, the millers marched like an army with banners; the packers chanted a paean of praise for sandwiches; the bakers themselves "boosted" the sales of the electrical men by pleading for a toast campaign; the retail grocers hobnobbed in brotherly love with their sometime rivals; and so we might continue to enumerate examples of the newer way in advertising.

Gone are the days when a manufacturer pushed his own product at the expense of his rival. Instead we find on every hand evidences of modern, scientific methods, short cuts to far-reaching results that benefit at one and the same time baker and packer, without whose joint efforts sandwiches would cease to exist.

How about building on this fine foundation a series of friendly contests?

If every food manufacturer not at present employing co-operative advertising, made it his business to ascertain just what he might accomplish thereby, using his own product as a basis, our literature of educational advertising would soon be materially enriched.

Eminent authorities, men like Mendel, Sherman, McCollum and others, are continuously offering to the world ripe fruits of their expert laboratory work in nutrition; broad-minded dietitians are well equipped to incorporate the findings of the scientists in educational programs of far-reaching influence; popular journals are eager to broadcast information regarding such work; teachers are on the alert to adapt resulting material to the requirements of their classes.

Who will be first among the new recruits in this modern army?

Another Hopeful Sign Of The Times

AMONG the many outstanding accomplishments at the recent convention of the American Specialty Manufacturers' Association was the definite preparation made for tackling the problem of specialty profit margins. The matter in all its aspects will be discussed and, it is hoped, settled at an informal meeting to be held in the near future.

Fortunately both sides appear to be in agreement as to the fundamental facts of the situation. It only remains to clear the ground for constructive action in the future and to administer the resulting program.

Jobbers should take heart from the fact that specialty men admit that they, the jobbers, are not receiving their full quota of profits. They should regard in the light of a friendly challenge the statement of the specialty men to the effect that they, the jobbers, are themselves largely responsible because of their price cutting.

In fact, as a writer in the "Journal of Commerce" points out, jobbers for the most part admit in turn that this is true, citing as one of their difficulties the fact that the high-minded majority has not yet worked out plans for policing their own ranks.

In his very high mindedness and sincerity of both sides lies, so it seems to us, the ultimate solution of the problem. Surely organizations so powerful for good as the American Specialty Manufacturers' Association, the wholesale grocers' associations and the National Retail Grocers' Association, organizations that are daily demonstrating their ability to cope with situations that affect the public welfare, may safely be trusted to set their own houses in order and to aid in preserving that wholesome cooperation which is "the life of trade," without for one moment going counter to the Golden Rule.

THE AMERICAN FOOD JOURNAL believes they may!

International Cooperation And Its Opposite

IF it be true that the Great War taught us to think in world terms it would seem to be equally true that the peace is teaching us the necessity for continuing the practice.

We are beginning to emerge from our smugly individualistic isolation and to apply to our own good the lessons other groups, in whatever corner of the globe those groups may be functioning.

Conversely, trans-Atlantic and trans-Pacific nations are learning from us.

A striking example of this latter fact came to the attention of THE AMERICAN FOOD JOURNAL, when, as guest of the National Dairy Council, we had the pleasure of meeting many of the delegates to the World's Dairy Congress. Among the many pleasant events was an after dinner speech by E. W. Langford, a former president of the Farmers' Union of England.

Mr. Langford said frankly that the English delegates to the Congress were returning to put in practice many ideas gleaned from the American tour.

Should not such friendly cooperation as this set an example to those foreign countries that are imitating American trademarks, thereby causing considerable trouble for the American Manufacturers' Export Association?

Charles Wesley Dunn, counsel for the American Specialty Manufacturers' Association, has digested the data on this subject and his scholarly report is a valuable contribution to the literature of legal trade topics.

Uncommon Sense In Food Legislation

SO often are we blind to our own best good!

Take the case of those enthusiastic framers of a bill that had to do with their own individual interests in the field of food manufacture. Realizing that one short cut to public interest was to play up educational matters and child welfare, these over-zealous legislators broadcasted copies of the bill bearing the misleading caption:

"Support Legislation That Means Education."

As a matter of fact the bill in question bore about as much relation to the education of children as to the founding of an empire in the middle of the Sahara. Only by indirect twisting of phrases and misapplication of facts was the caption made to relate even remotely to the subject matter of the bill.

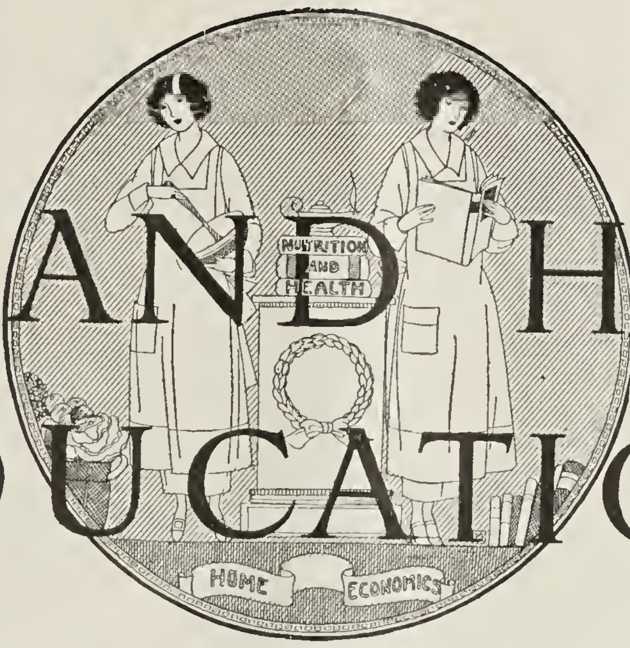
How much better if those legislators had labeled their bill for what it was, an appeal for the support of certain practices, admirable in themselves, but wholly commercial in nature.

Again, take the matter of labels.

The producer who insists that the labels on his fruit or other products shall bear an exact geographical designation is going counter to sensible, efficient team work, which is but another way of saying that the consumer cares little whether his apples come from Golden Creek or Pink Valley. What he does care about is the clearing up of complicated problems of food distribution and a simple system of labeling is one help toward the accomplishment of this end.

Good old-fashioned common sense is a wonderful help in business as in most other activities of life!

FOOD AND HEALTH EDUCATION



Edited by WINIFRED STUART GIBBS
Assistant Editor, BLANCHE INGERSOLL

10c a Copy NEW YORK, OCTOBER, 1923 $1.00 a year

The Domestic Science Teacher and Homemaking

Making Home The Starting Point Of All Domestic Science Projects

Accomplishment, some one says, "is based on the ability to see life quietly and to see it whole." The alert teacher of domestic science will subscribe to the excellence of this doctrine. Having helped to bring about the recognition of her subject as an important unit in the scheme of education, she may well look about her while she is deciding on her next steps.

One of these steps is likely to carry her beyond the stage of prolonged occupation with the routine of pedagogical technique, important as that may be. She will realize afresh that home economics workers in allied fields have much to offer her. There will be a determined effort to search for parallels in any material that may come her way and she will apply herself diligently to a program of utilizing these in working out her own problems. Such a course implies a certain amount of self training. It is comparatively easy to avail one's self of the experiences of one's colleagues; to turn to one's own account the results of work in other fields calls for greater originality of thought.

Probably domestic science teachers will unite in stating as their chief aim the training of students in home making.

How shall they approach the work of outstanding men and women in other divisions of their field? How analyze the writings of these individuals so as to apply their conclusions into wisdom? Which of the allied fields has most to offer?

By way of "a partial answer to these questions we refer to certain articles in the present issue of Food and Health Education. Take, for example, Mrs. MacDonald's paper on page 477. The teacher who is on the lookout for new ideas can scarcely fail to find them here. On page 477 Mrs. MacDonald says:

". . . To gain and deserve its rightful place in the educational system home economics will have to alter its plans for training . . . it will need to have a larger percentage of teachers who have learned the content of their courses by home experience as well as laboratory research. Homes are more than practice houses."

Idea number one!

Will not the teacher pause after reading this and resolve if circumstances make it impossible for her to have a home of her own, that she will, like Sentimental Tommy "find out a way" to make a definite contact with some home plant, either that of a friend, or such an experiment station as the Priscilla Proving Plant? There is always a practical solution for the problems of a person who is in earnest.

Again, take Mrs. Moore's paper On page 480, she writes:

"Interest does not exist in advance of publication and there can be no short cut to public health. . . The teacher welcomes the authority of the health journal, utilizes its dramatic incidents, finds in it graded schemes for hygienic lessons and discovers there the power of project teaching."

Idea number two!

The teacher will turn from the reading of Mrs. Moore's article with a fresh point of view as to how best to utilize the help of her health magazines.

And so we might continue.

The teacher of domestic science who is destined to get the best results from her efforts to teach her students "how to do better the things they must do anyway" is the one who knows how to keep her own horizon broad, her own viewpoint refreshed by contact with other minds, her own vision large enough to include a program of cooperation with workers in fields outside the class room.

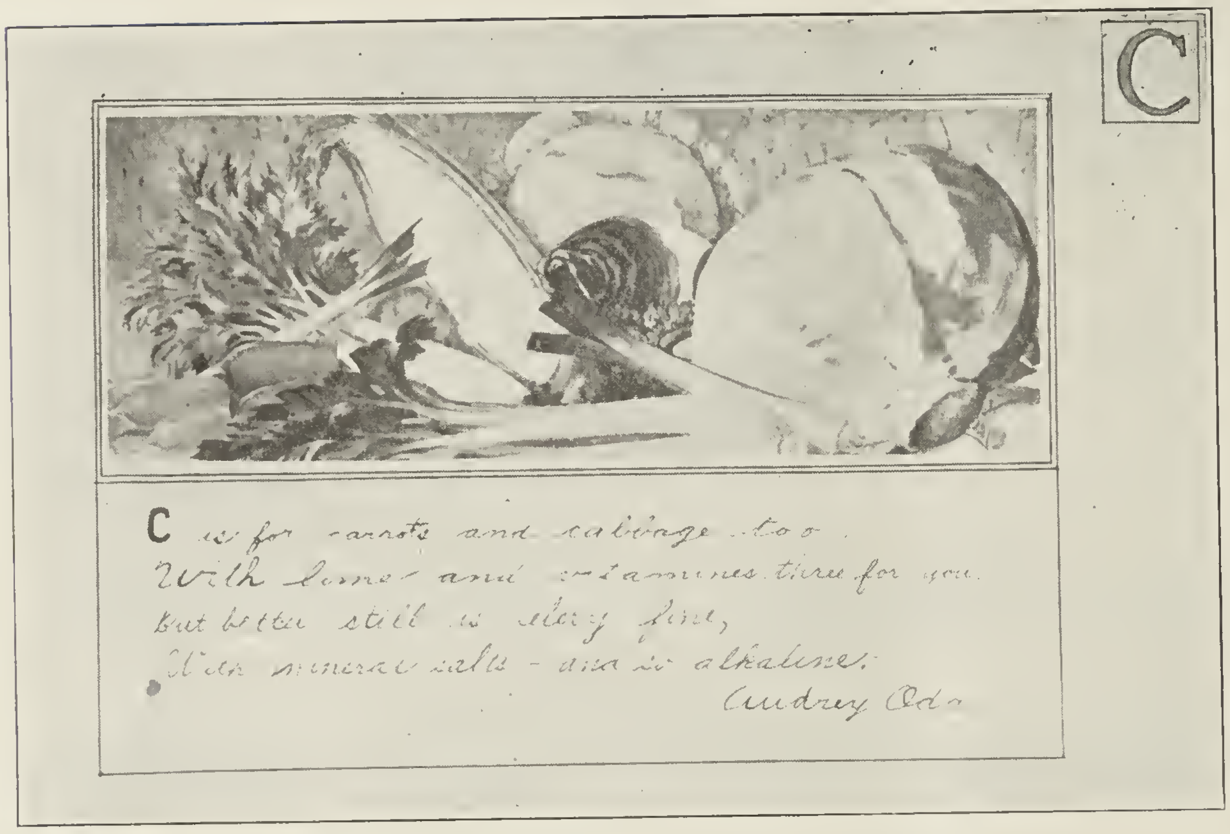
Winifred Stuart Gibbs.

Best Roads To Health

Presented By A Fifth Grade Class In Dayton, Ohio

By BLANCHE INGERSOLL

Assistant Editor FOOD AND HEALTH EDUCATION


C
C is for carrots and cabbage too
With lime and vitamines three for you.
But better still is celery fine,
With mineral salts - and is alkaline.
Audrey Od

One road to health that is easy to travel

"F is for Fruit so juicy and tart,
You'll eat all kinds if you're really smart.
For it gives you pep, and it makes germs fly,
No tonics or pills will you have to buy."

THIS remarkably good advice is contributed freely by fifth grade pupils and they could give you much more, equally good, if you would take time to listen for the fifth grade class of Dayton, Ohio, taught by Miss Edith Crowe, know health rules from A to Z. They not only know the A B C's of food and health but they have prepared their own health alphabet, and the result is a delightfully attractive and clever little book which they have called the "Best Roads to Health."

Child health alphabets are no new thing but the idea is one that may always be used in a new way. New alphabets always offer new possibilities. Miss Crowe found that the alphabet made a particularly good poster problem because it is naturally divided into twenty-six separate problems with the result a unity. Twenty-six letters require the solution of as many different food and health problems. Such a number might easily tax the ingenuity and resourcefulness of many older folks. To the children it meant that the food and health lessons must be learned before the poster work could be started.

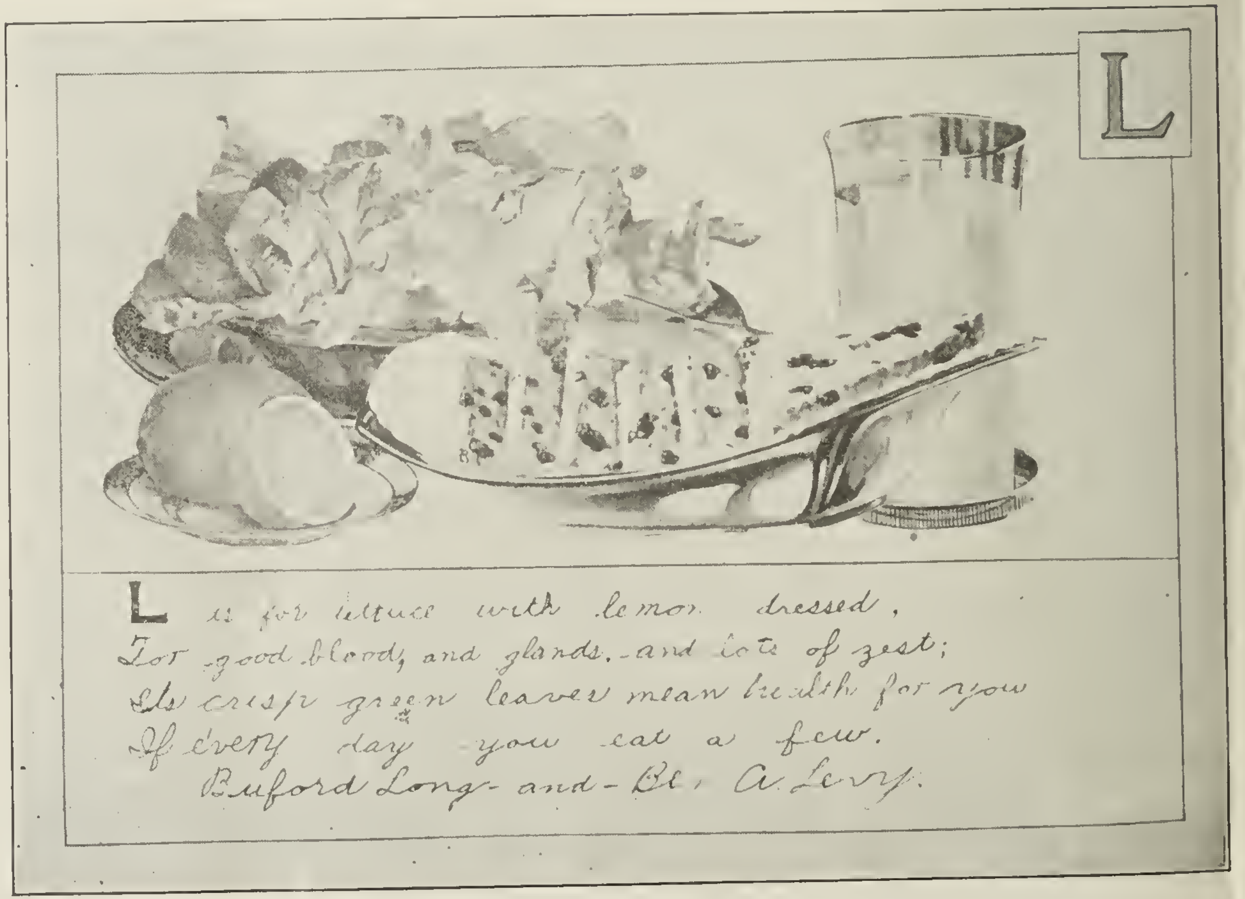
After selecting the letter and the food it was to represent, the next problem was the rhyme which must be entirely original. Pupils might get ideas from Mother Goose rhymes, other alphabets, advertisements, and what not, but the result must be of their own composition. Not one line could be copied from ony source whatever. This sent the youngsters scurrying everywhere. They read every jingle they could find, unearthing many clever ones which they brought to school to display proudly or to teach to their fellows even though they were not allowed to use them on posters. The result—an accumulation of ideas that would never have been secured if the teacher had permitted them to copy rhymes.

This part of the problem was linked up with language lessons so that the grammar, punctuation, and spelling might be correct. Needless to say the statements regarding food values, nutrition and health must be accurate. As each poster was an individual problem, no one type of rhyme was used. Mac Addison who made the M poster chose a short catchy line. According to Mac:

"M is for Milk,
The best food known.
A quart each day,
Until youre grown;
Its good for the young,
Its good for the old.
Dont drink it too fast
And never too cold."

On the other hand, Marjorie Brooks who chose the B poster—they seemed to like their own initials—used longer lines to tell the story of bread and butter.

"B is for Bread, with Butter spread thick,
On this fine food you never get sick.
Some kind each meal be sure that you eat,
For it gives your body strength and heat."


L
L is for lettuce with lemon dressed,
For good blood, and glands, and lots of zest;
The crisp green leaves mean health for you
If every day you eat a few.
Buford Long and Bl. A. Levy.

The L station on this road is a good place to stop for lunch

The S poster pictures a most attractive lunch of soup and salad with the following information:

"S is for Soup and for Salads, too,
Both of them equally good for you;
Nourishing soup with calories high,
Lacks the ash which the salads supply."

The style of the rhyme and the amount of space it would occupy on the finished poster had to be considered in planning the next problem — the illustration. Every attic and basement was called upon to give up its store of old magazines, since the right cut for a particular poster is not easy to find. First of all it must illustrate the food or foods to be emphasized. Pictures of individual foods or single dishes are comparatively easy to find but the children working with combinations of foods met with serious difficulties. Take for example the C poster here illustrated. The advertising men and seed catalogue makers were most inconsiderate in that they did not picture the exact combination of vegetables our young student desired. Consequently she made her own selection of corn, cabbage, carrots, celery and other things, and arranged them in an attractive group panel for the upper part of her poster.

This problem involving principles of design, color and artistic arrangement, is valuable from the standpoint of the art teacher. Some of the pictures in Miss Crowe's book are particularly attractive as illustrations of these art principles.

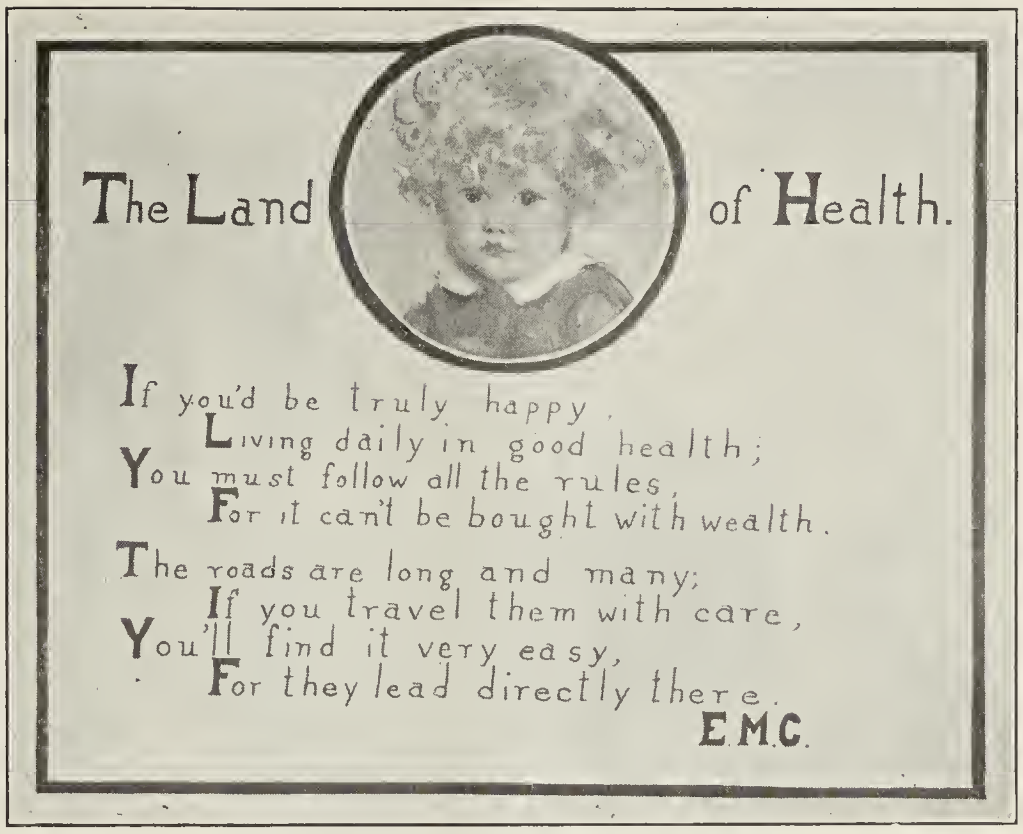
The grape poster is a combination of many cuts pasted together in such a way as to present grapes and grape products cleverly arranged on a lovely background. The blending of purples and lavender give delightful coloring to this page of the health book.

L stands for Long and also for Levy, so these two little chaps formed a successful combination producing the L poster which is a gem. Just to look at it makes you long to linger with these lovely foods.

Two other lads with a very natural preference for jam, made the J poster with a delicious jelly roll, a pot of jam, and clusters of berries and grapes to tempt your appetite. The particular kind of jam is not a matter of great concern according to the rhyme which says:

"J is for jam, a source of great joy,
I like it thick, for I am a boy;
Most any kind will make your heart glad,
Unless you're quite a particular lad."

The little lad who appears on this page, gazing so solemnly from under his curls, introduces you to the land of health as found in the book, and advises you to follow the many roads to health and happiness.


The Land of Health.

If you'd be truly happy,
Living daily in good health;
You must follow all the rules,
For it can't be bought with wealth.

The roads are long and many;
If you travel them with care,
You'll find it very easy,
For they lead directly there.
E.M.C.

No attempt was made to have the arrangement of cuts, rhymes, and panels similar on the different posters. Much of the charm of the book lies in the fact that each page is different. However, there is uniformity in placing the letters of the alphabet in the upper right hand corner of each poster. Large red letters were used for this purpose, each one being blocked off with black lines.

The book in which the posters are collected was made by some of the boys in the class. The background is of heavy dark gray art paper with the posters attached to the right hand pages. The cover is artistically decorated in black with insets of red, the lettering and designs being particularly well done considering the age of the pupils. The book is bound with a black silk cord and is one of which any school might well be proud.

Grade Teachers Study Nutrition

By ADA M. FIELD
George Peabody College for Teachers

WITH the growing emphasis on health there has been created a demand that the classroom teacher shall have a share in the formation of good food habits on the part of school children. This demand led me, in the spring of 1922, to offer in the Health Department of Peabody College a course in nutrition especially planned for grade teachers. This course, called "Health and Food," was without prerequisites of any kind; however, students who had had courses in science found these helpful. Naturally home economics students and others who had studied nutrition were not admitted. The time allowance is two periods weekly for a quarter of twelve weeks. It is the opinion of students and instructor, however, that three periods weekly would be more satisfactory.

The response has justified the experiment. Although the course is given twice during the college year and twice during summer school the average registration has exceeded twenty. The membership consisted of teachers of all grades, principals, supervisors, public health nurses and home makers. Seven per cent were men.

Work in the course is conducted principally by lectures, class discussions, assigned readings and written exercises. A few demonstrations are given and twice the class works in the laboratory. Rose, "Feeding the Family" is used as a text, and library reference reading on food composition and the physiology of digestion is required.

The first half of the course is devoted to a study of bodily requirements, food composition, and digestion. The following is the outline used:

Bodily needs supplied by food:
1. Energy — carbohydrates, fats, proteins.
2. Building and repair — proteins, minerals.
3. Regulation of body processes — minerals, vitamins, water.

Often students have difficulty in distinguishing between energy needs and structural needs. On this account there is a rather full discussion of energy—the various forms, transformations and units of measurement of energy, the "law of conservation" as a basis for dealing quantitatively with food in relation to bodily energy expenditure, the value of the calorie in terms of work, and the reason for using the calorie to measure the energy value of food. On the other hand, the class seems rather easily to master more than is required in the classification of the foodstuffs, even in the rather complex group of the carbohydrates. Having examined and tasted samples of the different sugars, together with dextrin, starches and glycogen, they usually become so interested in the relationships within the group and the fact that this great variety reduces itself, on hydrolysis, to three simple sugars, that they memorize the whole scheme of carbohydrates and their hydrolysis products. The results seem worth the effort, however, for it is seldom indeed that the sin of needlessly repeating the same foodstuff occurs in the dietaries made later.

Food Composition Studied

All the study of food composition is made in terms of foods used in this section or foods that could and should be used. While aiming at simplifying menus as regards the variety of carbohydrates and fats used at one time, I have employed the following plan to impress the need for increasing the number of sources of mineral. Each student selects from the tables in his text the five foods that he considers the best practical sources of calcium. He then calculates how much of each food would have to be eaten if the whole day's requirement of calcium were to be met by this one food. The same kind of calculations are made for phosphorus and for iron—thus giving three typical minerals. A lively discussion follows these exercises. Someone is usually disappointed to find that "Have you had your iron today?" cannot be answered by the five cent box of raisins. All admit the impracticability of the "one source" in most cases and readily agree that there is a well-founded reason for the liberal use of vegetables, fruits, milk and eggs, especially in the diet of children.

Unfortunately they cannot make the same convincing calculations for vitamins but the class accepts it as probable that there should be several good sources of each of the vitamins also. Each student selects from the tables available what he considers the five best sources of each vitamin. The value of raw food is discussed, and those methods of cooking that involve the smallest loss in minerals and vitamins.

The study of digestion is also a practical one, emphasis being laid upon the importance of good teeth and thorough chewing, the value of cheerfulness and freedom from worry, desirable and undesirable food combinations as regards gastric digestion, and the means of preventing gastric fermentation, intestinal putrefaction, and constipation. A brief discussion of absorption completes the first half of the course.

Metabolism and the elimination of waste are next considered. The chief aims here are to show more clearly why adequate amounts of protein and the other foodstuffs are needed, why excess protein and table salt are undesirable, how good posture and exercise contribute to good nutrition, and how an individual's requirement of energy, protein, and particular minerals may be experimentally determined.

Laboratory Work

The members of the class weigh and measure each other and each one calculates his own energy expenditure and protein requirement. The weights used for the calculation are from the insurance table averages for height and age, and activities are reckoned as directed in the text, chapters III and IV. The student then plans a day's dietary to satisfy his calculated specifications for energy and protein, using so far as possible, the dishes he is accustomed to eat. The completed dietary must show the protein, fat, carbohydrate and the total calories for each item, with totals for each meal and for the day. It indicates also, without giving amounts, the sources of calcium, phosphorus, iron, and each of the vitamins.

Previous to this time the class has learned to calculate total calories from percentage composition. Each member has also prepared in the laboratory a simple recipe, weighing all ingredients on a metric trip scale and calculating the carbohydrate, fat, protein and total calories and the weights of calcium, phosphorus and iron for the entire recipe and for the serving. Having thus learned how the data in printed tables have been calculated they are able to use this data with fair accuracy and freedom. They also have access to a permanent exhibit of one hundred calorie portions which includes nearly all common food materials as well as several prepared foods such as bread, crackers, muffins and plain cake.

When the dietaries are completed one is chosen to be prepared and served. The class hour is from five to six o'clock and this time is used for the cooking. The men usually choose to make ice cream or wash dishes. One breakfast and one lunch only are prepared, but the dinner is in sufficient amount to serve all members of the class. All materials are weighed and measured and recipes fully calculated. To the credit of the "untrained cooks" be it said that there are almost no failures in dishes, and a tidy laboratory is left behind, but the instructor usually retires early that night.

When all reports of recipes have been handed in, a mimeographed copy of the dietary as planned and also as prepared (only the latter showing mineral values) is made by the instructor for distribution to the class. Underweight and overweight members of the class then plan variations upon their maintenance diets to provide for gain.

From gain of weight dietaries for adults there is an easy transition to dietaries where gain of weight consists not of stored fat but of bone and nerve and muscle—the gain of growing children. When members of the class try to imagine themselves eating according to the "per pound per day" requirements of young children (two or three times their own usual dietaries) they readily decide that the utmost consideration should be given to having regular meal hours for children, and food easily digested as well as wisely chosen to provide for the needs of growth and activity.

Food for children is studied with reference to four ages: the pre-school, the kindergarten and primary, the upper elementary, and the junior and senior high school (adolescence). What the school may and should do to reinforce good home training and to correct that which is not good is considered in connection with each age. Weighing and measuring, the use and limitations of available standards of growth, the value of the medical examination, methods of establishing good habits in connection with the lunch eaten at school — whether brought from home or provided by the school—the child's interest in his own health as a "project," the method of supplying needed information through the usual grade subjects when interest has once been aroused —these and other topics come up for discussion.

A collection of books, together with publications of the United States Bureau of Education, the American Child Health Association, the Children's Bureau, and other agencies, is put at the disposal of the class and a short paper assigned on the topic, "How I can use nutrition subject matter in connection with the work which interests me most." Usually the papers take the form of lesson plans in geography, composition, drawing, arithmetic, etc. It is a requirement that the subject matter used shall be entirely suitable and natural and shall in no sense be "dragged in" nor burdened with a moral.

The course outlined above was offered as an experiment, but that it meets a real need is evidenced by the increasing enrollment. It is fascinatingly interesting to teach, because the members of the class contribute so many illustrations, applications and methods of using the material. It is beset with the danger always inherent in "a little knowledge," and one must stress carefully the fact that those who have had this course must not regard themselves as authorities in the field, but rather as better directors of their own food choices and as intelligent cooperators with the trained nutrition worker. Of such cooperators there is great need.

The Home as the Center of Home Economics Education

Homemaking Is The Most Important Subject in Public Instruction Since it Deals With Citizen Production

By ELIZABETH MacDONALD

Housekeeping Editor, "The Modern Priscilla"

Editor's Note.—During the recent convention of the American Home Economics Association in Chicago, Mrs. Macdonald made such a strong plea to teachers of domestic science for an educational program which should revolve around the home as a center, that we asked her to discuss certain angles of this question for the benefit of our readers.

As we look back over our history in home research, carried on in the home, our belief is strengthened that there must be more home in home economics before it can accomplish its essential mission. Homemaking is the most important subject in public education today, since it deals with the essential industry of citizen production, but it must be taught by doers as much as by theorizers, if the instruction in it is to be sound.

Home must be defined, as President Harding defined it, shortly before his death, as our most important industry. Men and women both must be definitely educated to think of it as their greatest opportunity. They must be prepared to undertake it in equal partnership. To this end, home economics in school and college should be a required subject with credit equal to mathematics and languages.

It should be taught to men and women alike—as a required subject—in its social, psychological, economic, and mechanical aspects. At present it is hardly taught at all to men and in many women's colleges it is relegated as an unimportant extra to the summer school, if indeed it is recognized at all.

Must Alter Its Plans

To gain and deserve this place for itself in the educational system home economics will have to alter its plans for training to make a real contribution. In the first place it will need to have a far larger percentage of teachers who have learned the content of their courses by home experience as well as laboratory research. Homes are more than practice houses. Childrearing is an art that theory is inadequate to reveal. A glance at the names that stand out in the history of the home economics movement shows a startling proportion prefixed by the title "Mrs." We need at least half of our teachers who have it. Another desperate need is for more men in the field. Home should be no more a woman's interest than a man's, and the expression of this principle must be made in the personnel of the teaching staff in home economics departments.

After all, example is the most potent influence in true teaching and so long as those who teach either do no homemaking at all, or else do it vicariously, we shall fail to have courses in home economics which can approximate the demand made of subject matter.

The Priscilla Proving Plant

The same thing is true of that other form of public education—the printed word. Just so long as editorial copy is prepared and supervised largely by writers not themselves actively engaged in the profession of homemaking, we shall be having less than the demand calls for of practical, progressive homemaking information. The final laboratory for homemaking research must of necessity be the home itself.

It was in this belief that the Priscilla Proving Plant was founded, and it is in that conviction that its work goes on. In it all our magazine material is actually lived before it is published. Our family consists of the normal family unit and resident workers besides. Some of these are laboratory trained, and others are trained by the equally important school of experience. A third group is inexperienced, either through the lack of opportunity to do home work or else by mental inability to profit by experience. A system of record keeping tabulates our reactions on the behavior of all the commodities in which the homemaker is interested as a purchaser.

Again take our menus. How may we simplify them and how keep them sufficiently varied? Good business teaches us that it is food we should consume and not the cook. Mere family preferences fade in the light of sane business judgment.

The average home is the most conservative of all going concerns. Women break home thought habits and home motion habits only with considerable difficulty. Men, too, enjoy the traditional idea of home and are not inclined to question the validity of mother's housekeeping methods any more than they change in loyalty to the flavor of her cooking. Since no business can move faster than the desires of its managers, it has followed that home equipment and technique have never been altered much from within and that the principal advances have been made, almost under pressure, by outside forces. The oil lamp had to fight its way against the candle, and it has taken forty years to create an active demand for the installation of electricity from inside the home.

On the part of women this devotion to traditional thought in homemaking is largely the result of the apprentice system by which knowledge of household management has been transmitted. Three outside influences, however, have combined within the last generation to upset this apprentice system. The first influence is already old enough to be in its turn a tradition—cheap help to do housework. The second influence is machinery, and the third is the proved mental equality of women to men in executive and professional jobs.

As soon as we had cheap help mothers stopped teaching daughters to do household work which rapidly sank to the status of undignified labor, measured by the financial reward it commanded. Machinery coaxed daughters to help in family work with a pay envelope rather than with manual labor at a mother's side. Proved mental equality gave women a fatal insight into the comparative ease of men's lives measured by the average woman's program, which rendered them less willing to train for the harder job of homemaking as against the simpler, easier, and less isolated business or professional activity.

Hope for Improvememnt

This breakdown of a deeply embedded system looks to the sentimentalist like a calamity. In reality, if we have the wisdom to rise to the present opportunity in our systems of public education, there is more hope than perhaps in any other period for a real improvement in homemaking. With the changed attitude of both young

In the Priscilla Plant business is applied to homemaking

men and young women there will be unparalleled willingness to take the first step essential to any radical change. The present generation, if rightly guided, will look forward to see where they are going themselves, instead of looking sidewise and backward to see where the crowd has been. Men are going to be harder to convince about changes in homemaking than women because they are more sentimental and less hard-headed than women. Ask a man what his idea of home is and he will usually define it as a good place to go when he is tired and hungry. Ask him what he wants it to be, and he will say a place to which he is proud to take his friends. That is the traditional attitude.

Broad vision combined with clear thinking defines a home as a unit in the most important productive industry in the country, the one devoted to increasing the output of competent future citizens.

If the same volume of publicity and the same beauty and cleverness of presentation could be made of this idea as will be given, in the next twelve months, to advertising toilet preparations it is no exaggeration to say that homemaking would take a new position of importance and magnitude which would give unique strength and growth to American social, business, and political life.

Wide broadcasting of this idea would command the earnest interest of young men and women and clear the air of the fog of Freudian influence and the mist of ancient prejudices.

Homemaking as a Business

The moment we accept this definition, modern homes must as a consequence be planned and carried on in modern terms. Wives become partners instead of chattels. Husbands become partners instead of owners. The home is the business in which both are equally important. This clear vision is far from detracting from the beauty of home life. It goes as far ahead of the traditional attitude toward home as a place of creature comfort and indulgence as the illumination of incandescence outshines flickering candlelight.

As an industry more essential than the production of coal or steel, homemaking takes on a new importance, presents a new interest, and a real challenge to the trained man and woman. The new viewpoint will inevitably bring a new organization, a new equipment, and new methods based on independent thinking.

Take the food problem as an instance of this change. Men have largely determined food habits. They became accustomed to certain flavors and aromas when they were boys, and these memories govern their food habits through life. Far more commercially baked bread would be used in this country if women determined our food habits. Husbands and fathers can still remember the home-made loaf and demand it either forcefully or by indirection according to individual temperament. Far more fireless cookers would be in use today if the men of the family would more generally enjoy the difference in flavor produced by moist instead of dry heat. On the feminine side of the psychological fence far less fancy cooking would be [illegible] if the main issues of dietetics as good business were more clearly seen.

When we look at the food problem as one phase of a productive industry we take account of stock, we determine our normal output, our overhead, our minimum costs, and our legitimate profits. We study the bread question from the angle of cool business sense rather than sentimentality. What is our normal output? What overhead do we carry in time, energy, fuel costs and equipment upkeep? How cheaply can we produce the given quantity of the required excellence? What are our net profits in increased enjoyment? We shall weigh commercially-made bread against home-made bread on all these counts and make our own decision in the light of the result.

On somewhat the same line of reasoning we made an investigation at the Priscilla Proving Plant last year and found it to be rank extravagance for us to make soup, because it came to us out of a can so much more cheaply in terms of materials, energy and time. It was highly profitable to us to enjoy the flavor of the commercial product, although it was not identical with the home-made variety to which we were habituated.

These are fragmentary typical instances which indicate what must be the attitude of modern training if we are to see the home come out triumphant in its present struggle with the childless apartment hotel. The hearthstone is the cornerstone of national prosperity. To keep it sound we need to reshape it to fit the modern social structure.

New Director of Homemaking in New York City

The work in homemaking carried on in the New York City public schools is doubtless the most extensive work of its kind in the world. Miss Martha Westfall, recently appointed director of homemaking for the entire public school system of New York City, has supervision over 300 teachers and 76,000 children. Such a number is appalling when one considers the sphere of influence represented by the homes of these children.

The responsibility of such a position is almost overwhelming but Miss Westfall is well fitted for such a responsibility having been connected with the homemaking department of the New York City schools for the past 17 years. Coming to New York from Ohio, Miss Westfall first entered the schools as a cooking teacher, later she was a teacher-at-large, and for the past few years has been assistant to the director of homemaking.

Miss Grace Schermerhorn, who was formerly director, is now connected with the American Child Health Association as associate director of the health education division.

Poster Aids For Home Economics

By MARGARET KERR LEYBURN

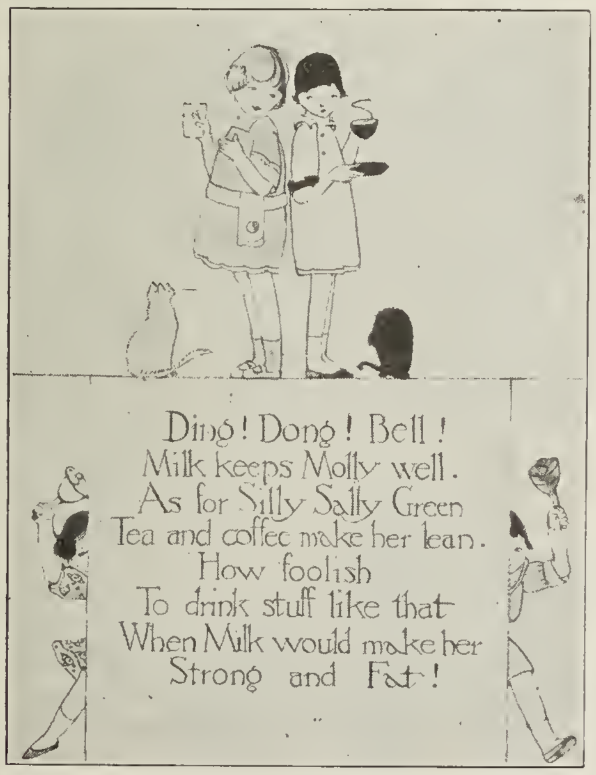
National Child Welfare Association

ONE of the most interesting movements in modern education is that of visual instruction. One authority has stated that "eighty-five per cent of knowledge is received through the eye, and not through the ear," and this fact is becoming more and more generally accepted by school authorities throughout the country.

Even before visual education became an accepted principle for teaching, the founders of the National Child Welfare Association saw far enough into the future to realize that in the carrying out of this method of presentation there would be an unlimited opportunity to present the cause of child welfare and betterment to the world.

The question of health is one that has received especial attention on the part of the association. After careful thought and consultation with the leading health authorities of the country, a complete series of posters was prepared to meet the various problems relating to the physical well-being of the child. Such questions as personal hygiene, fresh air, posture, and—most of all that of foods, were thoroughly and attractively treated in picture form.

The child must eat the proper foods in order to live a normal, healthy life. Her diet must be well balanced, she must have a certain number of calories supplied her each day. With the older girls and boys it is also necessary to teach the proper preparation of foods through the home economics classes in the schools. When such charts as "Balance Your Meals," "Milk Gives Energy," "Vegetables" are constantly before the pupils, the are obliged to have their aural concept of classroom instruction strengthened. We hear the teacher complain very often that "things just go in one ear and out the other," but it is never said "things go in one eye and out the other."


Ding! Dong! Bell!
Milk keeps Molly well.
As for Silly Sally Green
Tea and coffee make her lean.
How foolish
To drink stuff like that
When Milk would make her
Strong and Fat!

A poster the children like

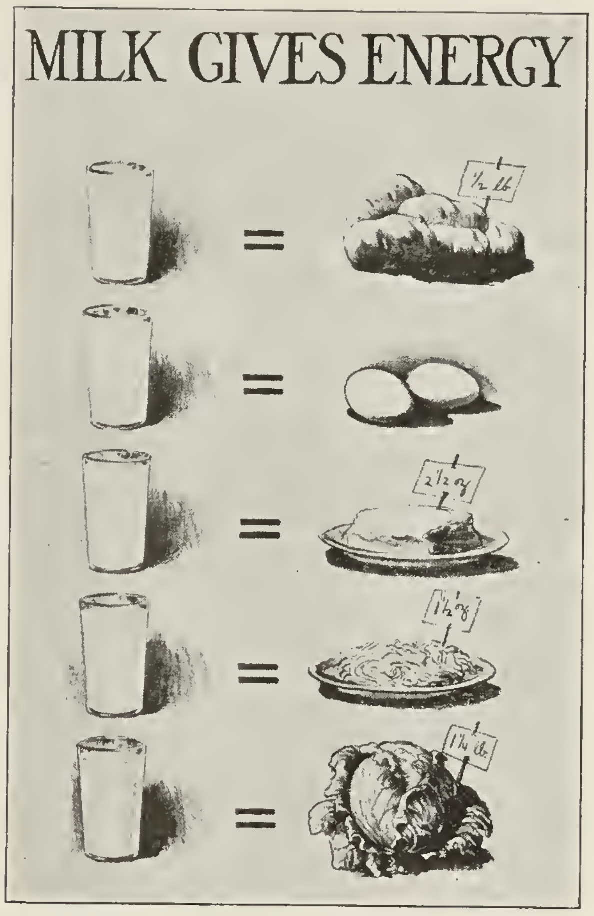
A child is never too young to be impressed by the lessons of the poster. A little girl came with her mother to the offices of the association one day. The "Ding! Dong! Bell!" chart reproduced below happened to catch her eye. Now this little girl, like many of her sisters, had always rebelled at the daily glasses of milk that were bestowed upon her, and had acquired the habit of taking sips of coffee and tea from the cups of her father and mother. Unnoticed by her mother, the child stood gazing at the poster for a long time, repeating the words of the rhyme softly to herself. Finally she ran to her mother and said, "Mother I want to look like Molly and not like Silly Sally Green, so I am always going to drink my milk now when you give it to me." And from that day to this, the mother has had no trouble in getting her little daughter to drink all of her milk—in fact, she often begs for more.

The use of posters in home economics classes accomplishes a threefold result. First, they are a distinct and invaluable aid in stimulating interest in the course that is about to be undertaken. Such charts act as a sort of "advertisement" of the work, and the pupil's interest is intrigued so that she becomes enthusiastic about learning more of the subject presented so attractively. Where this eager spirit can be engendered in the child, the teacher will have little trouble in making her work bear abundant fruit.

A second purpose served by the use of this graphic material is that of making vivid and lasting the impression of a lesson that may otherwise be quickly forgotten. Two thousand years ago the Chinese sage Mencius wrote "It is better to see once than to hear a thousand times." The posters on the walls of the Home Economics room will be a constant reminder of the laws of foods and health, the well balanced diet, and other such basic principles. They may be used to introduce new topics of study, to discussions, creative thinking and proper judgment.

A third most important function of such posters is to carry home the lesson the child has learned at school. Although the schools are in close touch with the homes today, there is still need for more cooperation between the two. While the following little story is perhaps an exaggeration of conditions as they exist in most localities today, it is a "true story" of what goes on in many homes. One day an eager little East-sider walked into the office of the association and held out a coin in his grimy hand.

"Please, I want one of those posters," he said. "Me mother won't buy me any milk. She just makes me drink coffee, and I like milk."



One answer to a food problem

And out he went with the poster under his arm to wage the battle for milk with his mother.

We are coming more and more to realize that a strong, healthful body is the rightful heritage of every child. Our schools are doing much toward establishing and carrying out that ideal. Educators are finding that they have a mighty ally in the form of these "silent teachers" in the fight against ignorance and indifference.

Editorial Note: The pictures illustrating this article are reproductions of educational panels prepared by the National Child Welfare Association, 70 Fifth Avenue, New York City, and are taken from over five hundred subjects relating to the physical, mental and moral development of children. Descriptive bulletins with prices will be set free by the association and their Handbook which contains information on child welfare and is illustrated with miniature reproductions of the posters, may be had for fifty cents.

The Nutrition Teacher

Jessie M. Hoover, milk utilization specialist with the United States Department of Agriculture, has some firm convictions regarding nutrition workers. "She should understand physiology, biology, psychology, and all the other -ologies. She should have a happy, contagious personality and inspire assurance and capability." Miss Hoover is urging that more nutrition work be put into the rural schools.

How the Health Journal Helps the Teacher

By SUSAN P. MOORE

Associate Editor, "The Nation's Health"

Editor's Note.—Mrs. Moore took part in several conferences during the convention of the American Home Economics Association in Chicago and contributed valuable suggestions as to how the domestic science teacher may profitably use the journal devoted to discussion of health problems.

INTEREST does not exist in advance of information and there can be no short cut to public health. There is no natural gift that enables one to see the health values of open spaces, of zoning laws, of building requirements, of factory inspection, of school supervision, of universal health education, and for this reason the service of the health journal in collecting pertinent information is not to be minimized. To thresh the chaff from current health reports requires something more than authority. It calls for both fortitude and endurance. Library shelves are now weighted with the more or less regular publications of nearly four thousand agencies, most of which studies would never see the light of day except as represented through the pages of the health journal. An average monthly news department will winnow no less than several hundred pamphlets and exchanges. Both the individual and his world require to be brought into perspective, and all these heterogeneous facts interpreted in a field so new that there is scarcely a standard which is not subject to revision in the light of new data.

The teacher, of all persons, appreciates this organization of material. She knows that her pupils are not to be interested through abstract statement, nor inspired to daily health practice except on the basis of human appeal. She welcomes the authority of the health journal, utilizes its dramatic incidents, finds in it graded scheme for hygienic lessons, and discovers there the power of project teaching. She measures her own methods with the activities of other groups doing the same work. All is grist that comes to the mill of the hard-pressed teacher, and in the health field she need never be afraid of exaggerating the importance of the subject. Whether the health lesson involve a trip to the water intake, the examination of a filter, the location of the plague belt encircling the globe, the study of the life cycle of a flea, or the measures necessary to construct for the benefit of her own charges an upward nutritional curve, the health journal enables her to grade her work and relate it to the world movement for the achievement of public health.

And she can always write to the editor for help on her own individual problems.

Susan P. Moore

The raison d'etre of a health journal differs in no way from the "what, when, how and why" of journalism in any other field. It simply particularizes the several factors which in their entirety make up the conglomerate whole called "news," interprets where it must and evaluates if it elects to do so, but for the most part lets the fact as it stands tell its own story, and depends upon discrimination and wide choice of materials to place the subject of health in its proper perspective. If there is a new note in the health journal of the present moment, it is because the situation has changed and health activity at last emerges as the sociological phenomen it actually is.

So long as health was indolently accepted as an extrinsic quality and its possession or the lack of it held wholly as due to fortuitous circumstance, progress was slow and analysis was not employed to determine the health bearings of environmental conditions. Man was conceived as in constant combat with cosmic process and as surviving at all only because of natural hardihood or through a painfully acquired tolerance of his living conditions.

It is not a particularly enviable task the health journal undertakes in advocating rational opinion on the basis of facts to replace personal prejudice, for in no other field does personal bias play such havoc. Persons would not think of expressing an opinion on the tensile strength of structural steel in opposition to the trained judgment of an architect, or of passing adversely on the efficiency of a valve recommended by an engineer, will with the greatest aplomb oppose a sanitary safeguard on an emotional basis or on religious belief. The health appeal is necessarily made to an inert public, and this is the chief reason why health objectives focus chiefly upon the young. If unfavorable habit—physical, mental, moral—is ever to undergo radical change, child education rather than adult reform will turn the trick.

The Value of Milk Demonstrated

Fifty classes of children in three grade schools of New York City are healthier, happier, and heavier, and are doing better school work as the result of the introduction of a milk lunch into these schools. Through the efforts of Miss Laura Cauble, director of the nutrition bureau of the Dairymen's League Cooperative Association, each child received a pint or half pint of milk each school day for eight months. The results offer convincing evidence that pure wholesome milk works wonders for the growing boy and girl.

The milk was delivered to the schools in half pint bottles and was served to the children during recess either in the class room or the indoor playground. Wherever possible the children paid for their milk but in the most needy cases the milk was furnished out of a school fund.

In one boys' school the milk was served at nine o'clock as a second breakfast, the boys bringing rolls or bread to eat with it. The principal of this school makes this lunch a means of business training for the boys who conduct the entire service collecting the money and keeping all the books.

In school number 17 the children were weighed and measured once a month, but it was not possible to do this in all the schools. The school record was kept by classes and the individual records were kept on cards the shape of milk bottles, the reverse side of the card giving some of the rules of the health game. From these cards the parents were not only able to keep track of the children's gains but also added to their own knowledge of the health game. The psychological effect in reminding both children and parents of a bottle of milk was one big advantage of these cards.

According to the results of the experiment as published in the "Dairymen's League News," the children gained in height, in weight, and in general physical condition. Furthermore the teachers' reports showed unusual advancement in school work, one class of over-age girls making such improvement that they did two terms' work in one.

The average gain in weight in the nine classes in which the weighing and measuring was done each month, was six and a half pounds—the lowest average per class being three and a half pounds, and the highest eight pounds.

In spite of the fact that this milk distribution means extra work for principals and teachers, they have given the most hearty cooperation realizing that they are building for future generations. The work has been followed up by close contacts with the homes of the children. Talks on the food value of milk are given in the school assembly rooms at which both parents and children attend.

This is the Big Brother of the well known Jell-O package. The big box holds a larger quantity of the same Jell-O that all good housekeepers use and all families enjoy. Hotels, restaurants, hospitals, schools, camps and institutions will find it convenient and economical to use this Institutional Size, to serve their patrons with Jell-O --- "America's Most Famous Dessert"

For Institutions

AMERICA'S MOST FAMOUS DESSERT
JELL-O
TRADE MARK REG. U.S. PAT. OFF.
A MIXTURE
SPECIAL PACKAGE
NET WEIGHT 26 OZS.
MAKES FOUR QUARTS
RASPBERRY
PURE FRUIT FLAVOR
VEGETABLE COLOR
This package makes four quarts of Jell-O. Serves forty to fifty persons according to size of portion.
Dissolve the contents of the package in four quarts of boiling water and set in a cold place to harden.
If only part of the contents is to be made up at one time, allow exactly one pint of boiling water for each 3¼ ounces (92 grams) of powder.
Further directions of great importance are given on each of the two side panels of this package. Be sure to read them.
THE GENESEE PURE FOOD COMPANY
LE ROY, N.Y.
AMERICA'S MOST FAMOUS DESSERT
JELL-O
TRADE-MARK REG. U.S. PAT. OFF.
NET WGT. 3¼ OZS.
A MIXTURE
DELICATE DELIGHTFUL DAINTY
RASPBERRY
PURE FRUIT FLAVOR
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THE GENESEE PURE FOOD CO., LE ROY, N.Y.
HIGHEST AWARD SAN FRANCISCO AND SAN DIEGO EXPOSITIONS 1915

For Families

The Jell-O Girl
since 1897

Apple Snow
Send for recipe book

JELL-O

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Combat this Great Evil

Do you know what a serious menace malnutrition is? Actual figures are alarming. 6,000,000 undernourished school children right here in our own prosperous United States!

These malnourished children present a problem in which the teacher is vitally concerned. Malnutrition in school children is a foe to every teacher. Your children cannot do credit to your teaching if they are not physically fit.

Any teacher can have an important influence on the health life of her children — more so even than parents — if she will.

Start a Health and Nutrition Class

Correct food and careful attention to health habits will overcome malnutrition in time. By starting health and nutrition classes in your own school you can accomplish a great deal.

The Nutrition Department of the Borden Company will be glad to furnish you with material and help you get your classes started. More than 500 malnourished school children have come directly under the observation of the field workers of this department during the past year.

The Nutrition Department has proved by exact and scientific experiments that Borden's Eagle Brand Condensed Milk is extremely beneficial in the treatment of this dangerous condition in children.

Eagle Brand is pure whole cow's milk combined with cane sugar. It is exceptionally rich in energy producing food; it contains elements essential to health and growth. Feeding experiments show that children fed on it gained as well as those fed on ordinary bottled milk. They showed decided improvement in every way, especially in appearance and progress in school.

The material collected by the Nutrition Department in these experiments, as well as an outline of the lessons used by Borden nutrition workers themselves will be placed at your disposal free of charge. Just write to the Nutrition Director, Borden Company, Borden Bldg., New York and she will advise you. Or if you wish health literature check the following list and mail it to her.

The Borden Company,
Borden Bldg., New York, N. Y.
Please send me the literature checked.
....20 Suggestive Lessons for Nutrition Classes
....An Interesting Experiment with Malnourished Children
....The Adolescent Girl
....Keeping Your Child Fit
....Menus for Little People
....Johnnie's Adventures with the Milkarpies
....The First Milkarpies
....Height and Weight Charts
....Health Records.
Name ____________
Address

Bringing Health To Children

By ELIZABETH COLE

National Tuberculosis Association

In one of the last letters Robert Louis Stevenson ever wrote he said: "I have been getting some of the buffets of late, but I have amply earned them—you need not pity me. Pity sick children." Such a selfless sympathy, such a simplicity and endurance in accepting his own suffering, such a plea to the world of grown-ups in those three words—"Pity sick children."

The world, thank-goodness, has acted on this plea and through its pity for sick children, has done much toward bringing health to boys and girls. Disease prevention has been the cry of health workers during the past years and through various methods they have aroused the interest of mothers, of teachers and of the children themselves.

Organized and systematic, the various health associations carry on the business of health nowadays with as trained, intelligent workers and as broad, practical goals as other business concerns conduct their work. Most of the health agencies emphasize: (1), the need for practising good health habits day by day and, with the physical machinery in perfect condition, to thus avoid sickness; (2), the desirability of being overhauled periodically through a complete physical examination by an expert physician in order that sickness may be caught in time for early treatment; and (3), the necessity for teaching children early the ways of health. This last element in sickness-prevention campaigns has been made so attractive that grown-ups can well envy the coming generation for all its advantages and joys in health.

The National Tuberculosis Association and its affiliated agencies have various media for making the lessons of health attractive. The "Modern Health Crusade" is a game of health wherein school children of various ages are knights like Arthur's knights of old and fight against the enemy, Disease. Through keeping daily health chores they become conquerors in the combat. They must perform such deeds as: washing their hands before each meal; brushing their teeth thoroughly; drinking three glasses of water but no tea or coffee; trying to eat only wholesome food including vegetables and fruit; drinking slowly at least two glasses of milk; playing outdoors or with windows open at least a half hour daily; being in bed eleven or more hours each night with windows open; having a complete bath on each day of the week that is checked on the chore record.

They hold tournaments, inter-school, inter-city and inter-state; they wear insignia and win pennants and cups; they are knighted with ceremony and pomp and strive to become members of the Round Table. The fact that the Modern Health Crusade in recent years has enrolled about 8,000,000 children in the schools of this country as well as in many schools abroad proves its popularity. A glance into some of the schoolrooms where chores are spontaneously and unitedly performed will show rosy cheeks, well nourished, sparkling-eyed , groups of clean, healthy children.

Another method of making health attractive to children is through health plays and pageants. The boys and girls produce these themselves and in the joys of being before the footlights they almost unconsciously absorb and give to their audiences many a message of health. Health clowns, with their clever amusing antics amidst laughter and handclapping cause their youthful audiences to go home with such echoes as "Coffee made him weak; milk made him strong," and "How do you brush your teeth?" "Why, up and down round and round."

A large truck, called a healthmobile, goes about in New York City from school to school showing health movies. In the truck itself are all the paraphernalia necessary for operating the machine, the silver screen and all.

A miniature theatre, called "Tiny Tim's House," provides for such characters as Mistress Bread, Mickey Potato, and Skinny Cough Medicine to strut about and have their say. The little characters' costumes fit over the fingers and the parts are read from behind the scenes, a la Punch and Judy. A marionette theatre, artistic and a bit more pretentious has also proved popular.

How can we tell that all this sort of propaganda is being successful? We cannot, by any specific figures. The only way to gauge its progress is through our greatly reduced death rate from tuberculosis. Childhood is the time when infection from this disease takes place. A good start on the highway of life makes all the difference in the world as to whether or not the germs will get a chance to become active later on. To build a strong foundation of resistance is what all these forms of health media seek to do.

Inasmuch as the death rate has decreased from 200 per 100,000 to 100 per 100,000 in the past 19 years it would seem to indicate that the methods are prospering. The cost of bringing health to children is great, however, and in order to carrry on, the National Tuberculosis Association and its 1,200 affiliated agencies need your help in their sixteenth annual Christmas seal sale.

The Domestic Science Teacher and the World's Dairy Council

TEN years or even five years ago it was the exception to find domestic science teachers of recognized standing in their own group affiliated with what was somewhat disdainfully called "commercial work." The women who made up the notable exceptions, however, labored to such good purpose that today, as we all know, domestic science in business is seen for what it is, one of the most potent activities in the interests of general welfare.

Recently the Philadelphia Inter-State Dairy council, one of the working units of the National Dairy Council, acted as host to the visiting delegates from the World's Dairy Council.

Standing out on a beautifully printed and illustrated souvenir program were these words:

"The Nutrition Department is always the most important."

By way of proving its sincerity in making the above statement the Council practically staked the success of the day on the work of its nutrition workers.

True, there were fine speeches by a governor, a mayor and any number of other notables, but after all notables have been making fine speeches at similar gatherings for a goodly number of years. It is not too much to say that the chalk talk of a nutrition worker, a talk in which real children were present as an audience; an "International Medley," in which beautifully presented national dances were accompanied by nutrition songs; a play, "How Milk is Made"; a "Health Circus," in the course of which every boy present, whether ten or fifty was led to the realization that nutrition was a help toward the enjoyment of circus and base ball, golf and hike; a nutrition play, "Making the World Fit"—that these were the outstanding features of a program that would have attracted favorable comment even without these features.

As to the banquet, here are some of the songs that were sung by hosts and guests:

EXERCISE

Tune—"Jingle Bells"

Cheeks are all aglow;
Eyes are sparkling, too,
We're the ones who know
What exercise will do.
Joyously we shout,
As out of doors we play,
If you would grow well and strong
That's the wisest way.

Chorus

Exercise, exercise,
Exercise and play.
Oh, what fun it is to be
Out of doors each day!
Exercise, exercise,
Exercise and play.
If you would grow well and strong
That's the wisest way.

SIX HEALTH DOCTORS

Tune—"Yankee Doodle"

The six best doctors anywhere
And no one can deny it,
Are sunshine, water, rest and air,
And exercise and diet.

These six will gladly you attend
If only you are willing;
Your ills they'll mend,
Your mind they'll clear,
And charge you not one shilling.

(Repeat Slowly)

The six best doctors anywhere
And no one can deny it;
Are sunshine, water, rest and air,
And exercise and diet.

A Program for Health Week

By ANNA IVERSON
Instructor, Springfield, Ohio

THE Chestnut Street Junior High School put on a week's health program, three departments taking part in the venture—the science, the civics, and the foods. Each department was given an opportunity to emphasize such points as it is most important to "get across."

Cho-Cho and the other health fairies opened the week's campaign by marching through the halls with flying banners, distributing charts, posters, and health quotations to the home rooms. Each morning during the week this band paraded the halls making announcements and singing health songs.

The civics department took charge of the work pertaining to hygiene through correct habits of sleep, cleanliness, fresh air, and care of teeth. They emphasized the relation between personal health and public welfare.

The science department stressed the effect of tobacco and alcoholic drinks upon health. Interesting experiments were shown of the effect upon different groups of young growing rats of foods rich or poor in vitamin content.

On Thursday all exhibits were arranged in the food laboratories on the third floor. Groups of foods showed well balanced meals for a day, a properly arranged lunch box, and special diet combinations. Particular emphasis was laid upon palatable dishes from uncooked vegetables and fruits. In this connection Junior III-A girls demonstrated the preparation of salads and different types of salad dressings.

Tea and other refreshments were served by the Junior I-A girls.

IN all recipes calling for baking powder, insure successful results by using Royal Baking Powder (absolutely pure.)

It is conceded by domestic science teachers and baking experts the world over to be "the most healthful and dependable baking powder made." Royal contains no alum—leaves no bitter taste.

American Child Health Association Meets

Great interest is being aroused in the first annual meeting of the American Child Health Association, which is to be held in Detroit, October 15, 16, and 17. The following is a summary of the program to be presented:

Monday, October 15

Morning

9 A. M. Meeting of the retiring Board of Directors.

10 A. M. General Session.

Annual Meeting of the Association, President Herbert Hoover presiding.

1. Reports of Officers and Committees.
2. Election of Officers and Directors.
3. Report of the Director: Review of Progress in the Field of Child Health, Courtenay Dinwiddie, New York City.
4. Address: Broadcasting Child Health, Mrs. William Brown Meloney, New York City.

12 M. Meeting of the newly elected Board of Directors.

12:15 P. M. Round Table Luncheon, Affiliated Societies' Delegates.

Afternoon

2 P. M. Special Session for Government Groups, J. H. Mason Knox, Jr., M.D., Baltimore, Md., presiding.

Topic: Problems of State and City Child Health Officials.

1. The Rural Mother, Everett C. Hartley, M.D., Carver, Minn.
2. The Pre-School Child, Mary Riggs Noble, M.D., Harrisburg, Pa.

2 P. M. General Session.

Topic. Community Programs for Child Health, Henry F. Vaughan. D.P.H., Detroit, Mich., presiding.

1. The Part of the General Public in Bringing About a Complete Program of Child Health Services, Haven Emerson, M.D., New York City.
2. With the Facilities at Hand, How Can We Take Care of the Pre-School Child? Arnold Gesell, M.D., New Haven, Conn.
3. Belgian Colonies for Debilitated Children, Monsieur J. Maquet, Belgium.

4 P. M. Demonstration of Health Education Through Play, Detroit Public School Children.

Evening

8 P. M. Public Meeting, Mr. Hoover presiding.

Addresses: Frank E. Doremus, Mayor of Detroit, Mich.; Mr. Hoover; George E. Vincent, Ph.D., President Rockefeller Foundation, New York City; Mr. James Fitzgerald, Detroit, Mich.

Tuesday, October 16

Morning

10 A. M. General Session.

Topic: The Workers in Health Education: The Work They Should Do, Mrs. F. C. Osborn, Detroit, Mich., presiding.

The Doctor, John M. Dodson, M.D., Chicago, Ill.

The Teacher, Mabel Bragg, Newtonville, Mass.

The Nutritionist, Lydia Roberts, Chicago, Ill.

The Nurse, Alta Elizabeth Dines, R. N., New York City.

Afternoon

2 P. M. General Session, Frank J. O'Brien, Ph.D., Louisville, Ky., presiding.

Topic: Practical Methods of Teaching Health to Children.

1. The Psychological Background of Health Teaching, Frank J. O'Brien, Ph.D.
2. Habit Formation — Health Preparation for School Life, Helen T. Woolley, Ph.D., Detroit, Mich.
3. Teaching Health to Young Children, Mrs. Marietta Johnson, Greenwich, Conn.
4. Teaching Health to Older Children, Maud Brown, Fargo, N. D.

4 P. M. Visit to the Merrill-Palmer School.

6:30 P. M. Dinner Conference arranged by Bureau of Education, Department of Interior.

Wednesday, October 17

Morning

10 A. M. General Session with the Child Welfare Section of the National Organization for Public Health Nursing, Winifred Rand, R.N., Boston, Mass., presiding.

Topic: The Problem of Early Infant Deaths.

1. How to Reduce the Mortality Rate in Early Infancy, Edward D. Cornell, M.D., Chicago, Ill.
2. The Part Which the Private Organization Should Play in the Possible Solution of this Problem, Mary Laird R.N., Rochester, N. Y.
3. The Function of the Official Agencies in Meeting this Problem, Frances S. Bradley, M.D., Little Rock, Ark.

12 M. Special Session.

Business Meeting of the Child Welfare Section of the National Organization for Public Health Nursing.

Afternoon

2:30 P. M. Joint Session with the Central States Pediatric Society and the Wayne County Medical Society, Thomas B. Cooley, M.D., Detroit, Mich., presiding.

General Topic: The Study of Physical and Mental Growth of the Young Child.

1. The Growth of Our Knowledge of Child Nutrition Since the 19th Century, Clifford G. Grulee, M.D., Chicago, Ill.
2. Child Psychology and Mental Hygiene, A. L. Jacoby, M.D., Detroit, Mich.

Note: Arrangements have been made for numerous Round Table Discussions. Among the speakers already secured are: Mrs. Olive Husk, New York City; Mrs. Laurie Jean Reid, Jacksonville, Florida; Mrs. Lucy Wood Collier, San Francisco, Cal.; Miss Sophie Nelson, Boston, Mass.; Louis I. Dublin, Ph.D., New York City; John C Gebhart, New York City.

The officers of the association are:

President, Herbert Hoover;

First vice-president, L. Emmett Holt, M.D.;

Second vice-president, Livingston Farrand, M.D.;

Third vice-president, Thomas D. Wood, M.D.;

Treasurer, Corcoran Thom;

Secretary, Philip Van Ingen, M.D.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **"Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition articles on hygiene suitable for supplementary reading, etc.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5 **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

Science Speaks!

High Authorities Prove Remarkable Health Value in

KNOX

SPARKLING

GELATINE

AN exhaustive investigation and confirmatory tests just completed by high scientific authorities, prove that Knox Sparkling Gelatine has remarkable health and food value combined with its many appetizing delights.

As An Aid to Digestion

Prepared as desserts or salads, Knox Sparkling Gelatine aids the digestion because of its action in softening the masses of other foods.

For Delicate Appetites

Knox Sparkling Gelatine is not only beneficial in itself, but it is an ideal conveyor of other wholesome foods to invalids, convalescents, and those who have "finicky" appetites.

To Promote Child Growth

Knox Sparkling Gelatine has been found to be unusually rich in nature's essential protein element — Lysine, which promotes healthful growth. It is therefore of the utmost value in the diet of children.

For Under-Nourishment

As a corrective in malnutrition and undernourishment, and in cases of rickets and scurvy, Knox Sparkling Gelatine combined with fruit juices is of great value.

In Infant Feeding

One of the most important facts proved by the investigation, is the value of Knox Sparkling Gelatine dissolved and combined in the right proportion with the milk in infant feeding. Ask your physician about this and write to us for the special pamphlet for mothers.

FOR EXAMPLE: Here is one of many recipes so rich in nutrition that it is almost a meal in itself. It will serve eight people.

Spanish Orange Cream

½ envelope Knox Sparkling Gelatine
2 cups of milk
Yolks of 3 eggs
¼ teaspoonful salt
½ teaspoonful lemon extract
1 cup orange juice
½ cup sugar
Whites of 3 eggs.

Soak the gelatine in milk ten minutes. Place over hot water, and when gelatine is dissolved, add sugar. Pour slowly on the yolks of the eggs slightly beaten, return to double boiler and cook until thickened somewhat, stirring constantly. Remove from range, and add orange juice, salt and lemon extract, then add whites of eggs beaten until stiff. Turn into one large or individual molds, first dipped in cold water, and place in ice box. (This will separate and form a jelly on the bottom and custard on top.)

If desired, serve with whipped cream, or sliced oranges, peaches, bananas, pineapple, chopped figs or a berry sauce. If preferred, omit the orange juice and use an additional cup of milk, flavoring the cream with vanilla or any desired flavoring.

"The Health Value of Gelatine"

The remarkable findings of this scientific investigation have been reprinted in a little book, "The Health Value of Gelatine." You can get it—free—together with Mrs. Knox's two recipe books, "Dainty Desserts" and "Food Economy," by sending 4c for postage.

The Charles B. Knox Gelatine Co.

111 Knox Ave., Johnstown, New York

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Books For The Domestic Science Teacher

Include With Your Subscription an Order for One or More of These Books

THE BOSTON COOKING SCHOOL COOK BOOK

By Fannie Merritt Farmer. Price $2.50

(New Edition, Revised and Enlarged)

An authoritative guide to the study and practice of cookery. The material is so well organized and the recipes so accurate that the teacher of cookery may use the book as the very foundation stone of her library.

MARKETING AND HOUSEWORK MANUAL

By S. Agnes Donham. Price $2.00

The author's unusual breadth of experience as one of the house directors of the Garland School gives her just the right background for the preparation of a handbook that is entirely practical and suggestive.

FEEDING THE FAMILY

By Mary Swartz Rose, Ph.D. Price $2.40

Professor Rose's book has stood the test of several years' service. The subject matter is based on sound scientific knowledge, the treatment is entirely informal and popular. Teachers of foods will find it invaluable in planning diets for family use.

FOODS AND HOUSEHOLD MANAGEMENT

By Helen Kinne and Anna B. Cooley. $1.40

A clearly written discussion of the relation of foods to the economics of the household. Of interest to all teachers.

PRINCIPLES OF HUMAN NUTRITION

By Whitman H. Jordan. Price $2.50

One of the best of the shorter books on nutrition. Enriched with many helpful tables of food values, thus appealing to the teacher who builds her professional library slowly.

RECIPES FOR INSTITUTION USE

Compiled by Chicago Dietetic Assn. $1.60

A collection, each recipe of which is vouched for by a well known dietitian. Teachers interested in the underlying principles that govern quantity cooking know this book.

HOME ECONOMICS IN THE ELEMENTARY AND SECONDARY SCHOOLS

By Agnes K. Hanna. Price $2.50

A text book for students in special methods courses in colleges and normal schools. The use of specific problems for which students see the need is the basis of the book.

THE ENCYCLOPEDIA OF FOOD

Price $10.00

Stories of the foods by which we live, how and where they grow and are marketed. Their comparative values and how best to use and enjoy them.

FOOD AND HEALTH EDUCATION

37 West 39th Street New York

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better with Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

Editor's note: Booklet Number 20, as listed in Food and Health Education for April, 1923, under the title "Bee Brand Manual of Cookery" is distributed at a cost of 50 cents per copy. We have been asked, however, to announce that the company publishing the book will be happy to make a special price for domestic science teachers of 25 cents per copy. The recipes includ specialties of Southern cooks and have all been tested by a graduate of Cornell University.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economies department. A 16-page pamphlet, containing discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."** A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for left-overs and plain desserts. A valuable pamphlet on the use of gelatine.

53. **"The School Lunch Box."** Illustrated leaflet giving attractive recipes.

54. **"Baking Powders, Classification and Ingredients"** Leaflet giving much scientific information on the composition of baking powders.

55. **"New Cook Book."** A new edition of a practical recipe book put out by a baking powder company.

56. **"Johnnie's Adventures With the Milkarpies"** Charmingly written booklet featuring value of milk.

57. **"An Interesting Experiment With Malnourished Children."** Reprint, showing good results of nutrition work on part of large condensed milk company.

58. **"Keeping Your Child Fit."** Menus for Little People, and the Adolescent Girl. Three pamphlets published by condensed milk company. Very attractively printed.

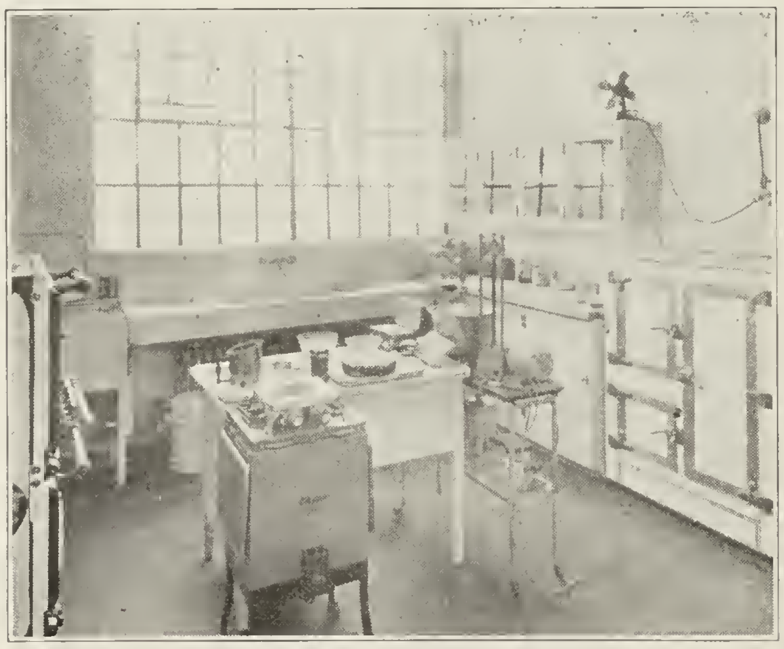
59. **"To Members of the Milkarpie Klub."** Folder, giving information about a health club for boys and girls. Published by a large condensed milk company.

60. **"The Famous Eagle"** and **"The First Milkarpies."** Two leaflets with educational fairy stories. Published by a condensed milk company.

61. **"Bread and Its Ingredients."** Pamphlet giving carefully prepared information on wheat, flour, milling, yeast and the finished bread. Illustrated. Valuable for supplementary class room reading. Published by a well-known yeast manufacturer.

62. **"All About Milk."** Pamphlet by Milton J. Rosenau, M.D., Professor of Preventive Medicine and Hygiene, Harvard University. Information about the produc-

A REAL EDUCATIONAL SERVICE



All recipes that are recommended by the Calumet Baking Powder Company are prepared and thoroughly tested by experts in this well appointed and sanitary kitchen, maintained by our Home Economics Department.

The Home Economics Department was established to offer a more complete educational service to the teacher, student, dietitian and food manufacturer.

Lecturers and demonstrations can be arranged for clubs and schools through the Home Economics Department. Guides will also be furnished to escort groups through the factory, the largest of its kind in the world.

Calumet is by far the most popular baking powder in America. Sales two and one-half times as much as that of any other brand.

Helen H. Downing, Director Home Economics Department

CALUMET BAKING POWDER COMPANY, CHICAGO, ILLINOIS

THE WORLD'S GREATEST BAKING POWDER

tion, distribution and consumption of milk. Published by a large life insurance company.

63. **"Metropolitan Cook Book."** Sixty-page booklet containing helpful recipes and suggestions for selecting proper food. Published by a life insurance company.

64. **"Metropolitan Mother Goose."** Attractive adaptation of Mother Goose melodies to modern health teaching. Also published on illuminated post cards.

65. **"How to Live Long,"** by Irving Fisher. Illustrated pamphlet, published by life insurance company. Gives fifteen rules for good health.

66. **"Clean Teeth Songs."** Illustrated sheet music, containing health songs for children. Published by manufacturer of toilet accessories.

67. **"Instructions for the Home Care of the Mouth."** Leaflet published by manufacturer. Helpfully illustrated.

68. **Two attractive "cut-outs,"** graphically illustrating the proper method of brushing the teeth.

69. **"Looking Inside a Health Tooth."** Folded model of tooth, showing structure and first steps in decay. Published by manufacturer of dentifrice.

70. **"The Little Gingerbread Man," "Cakes for Delicious Desserts," "Camp Cookery."** The first booklet is attractively illustrated in color, with rhymes and recipes for pastries. The other booklet and folder give recipes for the amateur cook and professional. Valuable for home or school use. Issued by a large baking powder company.

71. **"Pure Rich Milk Made More Digestible," "Milk for the Baby," "Pure Whole Milk—Concentrated," "Germ-Free Milk for Infants," "Safe, Wholesome Food for Every Member of the Family," "Milk at Its Best for Everybody," "How Evaporated Milk Is Prepared," "Recipes."** Six pamphlets and three cards. Showing prophylactic methods employed in the preparation of concentrated milk, recipes for its use, and a formula for the household. Also a cut-out illustrating in color the use of evaporated milk for picnic lunches.

72. **"The Facts About Vitovim Bread," "The Startling Story of the Super Loaf."** Two interestingly written pamphlets on the value of vitamins in the diet and their incorporation in bread. Issued by a large baking company.

73. **"Across Seven Seas," "About Tapioca."** Two illustrated leaflets and a colorful chart setting forth the history, cultivation and value of tapioca, directions for its use and well arranged recipes.

74. **"Recipes for Making Perfect Jams, Jellies and Marmalades," "Jams Made from Fresh Fruit," "Ann Proctor's Jam and Jelly Bulletin," "A Sight-Seeing Trip."** A bulletin and three folders dealing comprehensively with a process for making fruit syrups "jell," outlining the actual experiences of experts.

75. **"Modern Methods of Cooking," "Baking Powder Recipes," "Cake Recipes," "A Complete Cook Book."** The latter merits its name and should prove useful both in the school and the home. The three folders give general information regarding the use of baking powder, tables of proportions and recipes. All are written in a clear and instructive manner. Issued by the home economics department of a large baking powder company.

76. **"The Little Red Devil Recipes," "Simplifry Codfish Cakes."** A booklet and one page leaflet. The former gives appetizing recipes for the use of deviled ham and tongue, the origin and value of such products. The latter pictures "ready to cook" codfish cakes as an available dish.

77. **"The Story of a Prize Cup of Coffee."** An illustrated fairy story in booklet form, all about a king who, next to his beautiful daughter, loved a good cup of coffee. An appealing object lesson demonstrating the value of a self sealing wax paper as a coffee carton.

78. **"A Wholesome Tonic."** A folder illustrating the use of an acid phosphate both as a flavoring for cooling drinks and a tonic. Recipes are given. A pleasant way of adding phosphates to the diet. Published by a large baking powder company.

79. **"Made Dishes, Salads and Savories," "Cream Salad Mustard."** Several folders and two leaflets telling all about mustard, with comprehensive recipes. Useful for picnic parties and the home.

80. **"A Calendar of Dinners," "The Whys of Cooking," "Balanced Daily Diet," "Recipes for Everyday."** Four books by domestic science authorities giving well planned recipes and valuable material dealing with diet needs. A cooking fat is recommended for general use, and its food qualities demonstrated.

81. **"New and Delicious Ways of Preparing Pork and Beans," "About Peanuts and Peanut Butter," "About Macaroni."** Ten folders and a series of bulletins showing sanitary methods of preparing these and other products. Recipes and menus

KLIM

SPELL IT BACKWARDS

MANY teachers of Home Economics are greatly handicapped by the inconveniences of their local fresh milk supply.

Deliveries are uncertain—requirements fluctuate according to class attendance. Ice is a problem! Milk purchased over the week-end

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"Home Economics Education." By Henrietta W. Calvin. Bulletin No. 6 Bureau of Education, Department of the Interior, Washington, D. C. Copies at 5 cents each, from Superintendent of Documents, Government Printing Office, Washington, D. C. A discussion of teaching problems that is invaluable for all teachers in secondary and junior high schools.

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The Carbon Dioxide Treatment of Foods

By SAMUEL C. PRESCOTT
Massachusetts Institute of Technology

THE development of modern methods of treating certain types of food substances with carbon dioxide as a means of preserving their natural flavors, or of preventing decomposition processes, is well worth careful consideration. This is especially true in view of some of our newly acquired knowledge regarding the vitamins and their instability or destruction when exposed continuously or even for short periods to the action of air or oxygen. In fact, it seems to the writer that a thorough investigation of the occurrence of uncombined carbon dioxide in natural foods such as fruits, roots, tubers, and cereals, might throw much light on the part actually played by this gas in the economy of nature.

It has been rather the custom among those concerned with foods to regard carbon dioxide merely as a decomposition product, and as such, indicative of undesirable changes in food substances. This opinion can hardly be warranted if we study carefully the role of carbon dioxide in nature, and assemble the facts that have been established one by one during the many years that the gas has been observed. The biochemist has shown conclusively that this compound, instead of being merely a waste product of living things, is in reality also a building material of the utmost importance, and absolutely essential for the construction of all food substances. It is significant that the green plants, which are the real food-builders, not only give off carbon dioxide as a respiration product or product of metabolism, but also because of their ability to absorb light energy, utilize vast quantities of this substance through the process of photosynthesis, in building up the world's food supply. One of the most recent texts in general biology, by Professors Burlingame, Heath, Martin and Pierce of Stanford University, states that "sugar is the fundamental product of photosynthesis, and because of this fact photosynthesis is "the most important chemical reaction in nature, for all food is built up from sugar." As the essential carbon-containing raw material of sugar manufacture, therefore, and fuel manufacture as well, carbon dioxide must be looked upon as our most fundamental food substance, although not usable for constructive purposes until further combined.

As a Protective Agent

The role of carbon dioxide as a protective agent is probably less generally given attention, but it is on this action that the modern processes rest. It was pointed out by Dr. Kolbe of Leipzig nearly forty years ago that meat which was stored in airtight compartments filled with carbonic acid gas "retained its healthy appearance and agreeable taste for a period of six weeks." This observation was made before the bacteria as agencies of spoilage and putrefaction were generally known, and certainly before the different types of bacteria capable of producing destructive kinds of chemical change had been discovered and described. Our own famous Dr. R. O. Doremus of Bellevue Hospital Medical School stated in a letter to the American Carbonate Co., under date of April 27, 1887, "It (carbon dioxide) will aid in preserving not only potable liquids, but also berries, fruits and meats."

The action of carbon dioxide as it is produced in fermentation has long been known to be beneficial from the standpoint of the stability of the product and also as an agency for maintaining the agreeable taste and flavor of the beverage.

In the manufacture of soft drinks, such as gingerales, near-beers, bottled "sodas," etc., the carbon dioxide assists materially in preventing fermentations due to molds or bacteria, as well as in imparting the characteristic quality by which flavors are accentuated and a refreshing effect produced. Fermented milks containing carbon dioxide maintain a more uniform acidity, due apparently to a regulation of the activity of the lactic acid bacteria whose function it is to produce the characteristic buttermilk flavor.

Studies on natural and carbonated waters explain in part at least why these results are obtained. Many spring waters in the fresh condition contain numerous bacteria of several different types all more or less characteristic of the natural surroundings and in no way indicative of pollution. The same waters bottled in the "still" condition often continue to show bacteria in numbers somewhat increased due to the processes of growth and reproduction, the organisms dying out only after a long period. The same waters bottled and charged with carbon dioxide show only occasional or very few bacteria, and are often free from living germs. In other words the carbon dioxide has introduced a condition unfavorable to the continued life and action of these particular kinds of bacteria, but not all bacteria are equally affected. Those types requiring a high oxygen or air content tend to be inhibited or choked out, while those capable of adjusting themselves to a variety of conditions are not only not seriously impeded by lack of oxygen, but on the other hand, rather favored by this condition, are likely to remain alive and may even grow in the presence of carbon dioxide, providing the acidity is not too high.

Since the types of bacteria naturally occurring on leaves, fruits, and vegetables, and on the surfaces of meats exposed to the air and to contact with ordinary surfaces are largely of the air-loving types, it is easy to understand how carbon dioxide in sufficient concentration may check bacterial development and hinder the type of spoilage (natural decay) due to these germs. With protein foods infected with the semi-anaerobic or anaerobic putrefactive bacteria, another explanation must be sought, and here the increased acidity due to carbonic acid may be responsible for the prevention of spoilage, as the organisms involved generally work best in media low in acidity, neutral, or even slightly alkaline in reaction. It would seem to the writer, however, that too much should not be expected along this line, and that carbon dioxide should not be regarded as a perfect disinfectant for foods until much more extended study of its capabilities has been made.

A Food Preservative

Whether the above hypotheses are or are not adequate to explain the action of carbon dioxide, and despite the suggestion of limited potentiality, there is a not inconsiderable mass of evidence pointing to the efficiency of the gas as a food preservative and improver. This has been especially demonstrated in dairy products, such as butter, ice cream and milk powders, but is also noted in bread, foods containing unsaturated fats or oils, and with fresh fruits. Most important of all, from the nutritional standpoint is the irrefutable evidence produced by Zilva, McClendon, Hopkins, and others that carbon dioxide preserves the indispensable vitamins, the fat-soluble vitamin A and the antiscorbutic vitamin C which are destroyed by oxidation, and especially by the application of heat in contact with air. Any process which tends to retain and protect these elusive but essential components of food so that they may be utilized for growth and health-promotion by the ultimate consumer of the food is well worthy of serious and continuous study. Incidentally many interesting side questions are brought up. Van Slyke has shown that freshly drawn milk contains about 10% of CO_2 by volume, but that this amount lessens on exposure to air. It might be of importance to determine if the "germicidal property" of fresh milk is related to its CO_2 content rather than to specific substances producing either destruction or agglutination as has been suggested.

There is every reason to believe, and certain investigations support the conception that some at least of the CO_2 produced during the respiratory changes in sweet fruits which are extraordinarily active during the ripening process, remains dissolved in their juices, and it would be difficult to conceive of such a combination of CO_2 with such juices as would fail to participate in the prevention of the decay of such fruits. This is especially true in view of the utilization of CO_2 in numerous practical processes designed for the preservation of bottled or prepared fruit juices. Of course it is well known that the skin also acts as a mechanical barrier against the entrance of invading fungi or bacteria.

The Heath Method

According to a popular article in the Literary Digest in November, 1922, a considerable portion of the grape crop of California in that year was saved from decay by the use of carbon dioxide to replace air as an atmosphere in which the fruit was maintained. The application of this process to many other kinds of fruits, as well as to a variety of foods aside from fruits, has been made in the so-called "Heathization" of foodstuffs and in the packing of coffee, nuts, chocolate and many other substances in inert gases, to prevent the oxidation of fats and consequent rancidity.

Perhaps the most spectacular as well as the most valuable and widespread use of this method of food preservation is in the so-called Heathization of butter and ice cream—a process which as it is now being applied, is doing much to raise the standards of commercial quality of these foods. No food substance responds in its fine shadings of flavor more quickly than does butter to changes in environment, to odors, or contacts, or dust or to the action of air itself. In fact, the air which is worked into butter has for several years been recognized by experts in dairy products as one of the chief deteriorating influences from the standpoint of fine flavor, for it was found by direct investigation that the "off flavors" of butter were due in large part to the oxidations caused by this imprisoned air or to minor fermentative changes caused by the bacteria on dust particles introduced during churning in an air atmosphere. The use of vacuum churns was impractical, and the next step, worked out logically and with scientific precision by Mr. Heath was the process to which his name is given. With the new knowledge of the relative effect of air and of carbon dioxide on vitamins occurring in butter fats, the soundness of the principles which he has established cannot be gainsaid, and it surely seems as if this process should become universal.

Applies Also to Ice Cream

In the manufacture of ice cream the same principal holds good, although here of course the low temperature maintained in hardening rooms and in storage prevents the oxidative or bacterial changes from becoming so apparent or so intense. The principles involved—the use of a pure inert gas in place of a possibly dirty air, the reduction of oxidations of fats and the preservation of vitamins—are, however, the same. Comparative studies in my own laboratory, using a large group of students and others as test individuals for the purpose of detecting differences in flavor and appetizing quality have been made with interesting results. Ice creams of identical composition as to the "mix," but frozen in air and in carbon dioxide, respectively, were used in these studies, and it was repeatedly found that the cream frozen in the atmosphere of carbon dioxide was regarded as superior in texture and flavor. The fact that carbon dioxide tends to accentuate flavors was demonstrated. No manufacturer who desires to sell a poor product or to mask an "off-flavored" butter or ice cream can derive satisfaction by use of carbon dioxide. A good product is made better, but a poor one is made less satisfactory in flavor by its use. The tendency will therefore be, as this process extends in use, to raise the standard of quality of these foods. Those who cannot compete will have to withdraw or be satisfied with producing a distinctly inferior product at a lower price.

No further description of the manifold applications of this method need be made here, as the purpose of this article is to call attention to the desirability of extending the researches already begun in this field from the standpoint of food preservation, and also to stimulate the investigation as to the physiological action of carbon dioxide in the special senses of smell and taste.

Fish As Food

By DONALD K. TRESSLER, Ph. D.

When a fish dies it stiffens almost immediately, the flesh becomes rather firm and elastic. This condition is called rigor mortis and is a guarantee that the fish is perfectly fresh. But, since even under the most favorable storage conditions, rigor mortis gradually disappears in a short time, its absence does not indicate that the fish are not sufficiently fresh to be of excellent quality as food.

The flesh around the large caudal vein and the kidney in fresh fish is light colored. As staleness approaches, this flesh becomes discolored by the blood. If this discoloration is found, it is evident that the fish has been caught for some time, but does not indicate definitely that it is unfit for food. However, the presence of this reddish discoloration on the ventral aspect of the backbone should cause the fish to be regarded with suspicion, and other tests should then be made to discover whether the fish is stale or putrid.

Although the personal factor enters so largely into the judging of the condition of a fish by its odor, and although fresh fish of different species vary considerably in this respect, yet the use of the sense of smell is invaluable in the examination of fish. Many individuals have difficulty in distinguishing between the odor of fresh fish and that of slightly tainted or stale fish; but few, if any, have trouble in discerning a putrid odor.

It requires considerable energy to strip the flesh from the backbone of a strictly fresh fish and many pieces of flesh are left adhering to the bone, but after the fish becomes stale the flesh comes away readily and comparatively cleanly from the bone. This is another test which may be applied to show the relative freshness of a fish.

The condition of kidney is another very important criterion. It is a very diffuse, vascular, and friable organ, which rapidly decomposes and in a few hours at ordinary temperatures, passes through different shades of color to form a reddish brown jelly-like mass. The abdominal walls also break down quickly. In fresh fish they are firm and elastic, but as the fish grow stale they lose their strength and become soft and pulpy.

The test of nearly every housewife is to examine the gills. The gills of most fish are red in color with certain specific tints. These tints disappear in about 24 to 36 hours, and by the third or fourth day the gills become gray and slimy if the fish are not kept at a low temperature. This test is not infallible as frequent washing of the fish aids in the retention of the color; moreover, the gills of trawled fish are often paler at the time of capture than those of line fish; and also there are degrees of paleness even among perfectly fresh fish.

The eyes of a freshly caught fish are full and prominent with a jet black pupil and transparent cornea, but they gradually shrink and become grey in color as staleness develops.

A great deal may be learned concerning the past treatment of fish by a careful examination of their general appearance. The presence of their characteristic sheen and the usual firmness of the scales indicate perfect freshness. If the scales present a patchy appearance on the skin of the fish it indicates either that the fish have been trawled or have been roughly handled.

Anderson[2] summarizes the characteristics of stale fish as follows:

1. Rigor mortis has passed off.
2. Reddish discoloration on the ventral aspect of the backbone.
3. Smell becoming tainted, passing to putrid.
4. Flesh strips off readily and cleanly from the backbone.
5. Abdominal walls becoming soft and pulpy, with commencing discoloration and tainted odor.
6. Gills lose characteristic tint, becoming grey and slimy.
7. Eyes grey and sunken.

Chemical Characteristics of Fresh Fish

The flesh of perfectly fresh fish is acid to litmus, but as rigor mortis passes off the reaction changes to neutral becoming distinctly alkaline as decomposition sets in. The increasing alkalinity of fish during storage is caused by the gradual decomposition of the proteins and other nitrogenous constituents. Enzymes contained in the blood, in the kidneys and other organs of the body, are particularly active in effecting this autolytic decomposition. Bacteria contained in decomposing food in the intestinal tract also bring about the formation of amino acids and amines in short periods, if the fish are not eviscerated or refrigerated.

The first chemical reactions of autolysis are chiefly those of the hydrolysis of the proteins into simpler chains of amino acids. Proteins are broken down into proteoses, which are in turn split into polypeptids and amino acids. The end products of the decomposition of these nitrogenous compounds are amines, ammonia, carbon dioxide, methane, hydrogen, etc. The exact nature of the end products depends upon the agencies effecting the final decomposition, and the amount of oxygen present.

The author[3] found that the rate of formation of amino acid nitrogen in fish was an excellent index of the rate of decomposition of the protein. The rate of formation of proteose, polypeptids and amines also give much information concerning the chemical changes of proteins.

Fats are much more stable compounds and are not affected to any appreciable extent during the ordinary storage of fresh fish, but during refrigeration for long periods as in the preservation of frozen fish, if they are not reglazed often to replace that lost by evaporation, the air comes into contact with the fish, the fat soon becomes rancid and the fish "rusts." Rusting may be estimated chemically by determining the amount of free fatty acid present in the fat. Kreis proposed a phloroglucinol test for detecting rancidity, and Kerr[4] developed this method into a roughly quantitative test. However, neither the Kreis test nor the Kerr modification is an entirely satisfactory method for the determination of rancidity in fish fat.

Proximate Composition

The percentage of fat in different species of fish varies widely. Salmon, shad, herring, butterfish and mackerel are well-known fatty fish, whereas cod, haddock, cusk, pollack and flounder have long been recognized as lean fish. Fishermen have observed that certain fatty fish such as the herring and mackerel are much fatter in the late fall and winter than in spring and summer. Moreover, many fish, such as the salmon and shad, are known to be high in fat during the early development of their sexual organs, and very lean immediately after spawning.

Many other factors also influence the amount of fat in the individual fish. The larger, older fish are often fatter than smaller fish, especially those of the same school, as they are stronger and thus are able to seize more food. Female fish during the early development of the ovaries, are usually fatter than male fish of the same schools. Fish caught on excellent feeding grounds are fatter than those caught elsewhere.

Clark and Almy[5] made a study of the common food fishes of the Philadelphia markets with especial reference to a seasonal variation in composition, and concluded that of the ten marine fishes examined at different seasons of the year, nine species showed a definite tendency toward a seasonal variation in composition.

A consideration of their results and a comparison of the many published analyses of fish makes it plain that a single analysis, even if based on large numbers of individuals, cannot be accepted as representing a typical composition. The great bulk of the proximate analyses of fish are therefore of little value, except that they may be used for the classification of fish into two general groups, namely fatty and non-fatty fish (fish of low fat content).

Clark and Almy have shown that the protein content of fish is approximately the same in both fatty and non-fatty fish. The conclude, "as the fat content increases the water content decreases, the protein remaining practically the same." This relation is shown by their figures for blackfish, bluefish, Spanish mackerel and shad.

Dill has studied the seasonal variation in composition of the California sardine,[6] Sardinia caerulea, and the yellowfin tuna, bluefin tuna, sablefish, barracuda and the California mackerel[7] Scomber japonicus. The results of his work agree with those of Clark and Almy in that he found that there is a great variation in the composition of the same species of fish at different seasons of the year, and of individual fish from the same school or different schools. However, he concludes that these variations are frequently erratic and cannot be ascribed to known factors, and that the variation in the composition of the California mackerel during one season was not paralleled by the next season's variation.

Nature of Constituents

Unfortunately, relatively little work has been done to determine the exact chemical nature of the organic substances forming the tissues of fish. It is mainly the muscular tissue of fish which serves as a foodstuff and therefore, in this article, its composition will be given the chief consideration.

Nitrogenous Compounds: The nitrogenous compounds occurring in fish muscle are for the most part similar in nature to those found in the muscles of the higher vertebrates but differ from them in containing more collagen and less extractives.

Extractives: Various writers have shown that histidine, hypoxanthine, carnosine, tyrosine, creatine[8], and creatinine are the principal compounds obtained by the aqueous extraction of fresh fish muscle. The presence of imidazo-ethylamine, leucine, and alanine has also been reported.

Distribution of Nitrogen: Several workers [8, 9, 10] have studied the form of the nitrogen of fish flesh and have shown that it is chiefly albuminous nitrogen. Upon hydrolysis the albuminous compounts yield approximately 61 per cent of monamino compounds, 30 per cent of diamino compounds, 2.5 per cent of humin nitrogen and 6 per cent of amide nitrogen. Chicken muscle yields slightly more monamino nitrogen and slightly less humin nitrogen. Ox muscle, however, yields only about 27.3 per cent of diamino nitrogen, and 5.50 per cent of amide nitrogen, but gives much higher percentages of monamino nitrogen (about 64.4) and humin nitrogen (2.66). Thus it is seen that the analysis of fish muscle closely resembles that of chicken muscle.

Composition of the Proteins: Osborne and Heyl[9] studied the products of halibut (Hippoglossus hippoglossus) muscle, and more recently Okuda and Oyama[11] have studied the composition of the proteins of the muscle of a Japanese porgy, Pagrus major. Okuda[12] has determined the cleavage products of both the ordinary flesh and the dark flesh (chiai), which occurs in the lateral muscles of the bonito. Okuda, Okimoto and Yada[13] have published similar work on the flesh of the cod. Analyses of other species of fish are not available and therefore it is not possible to draw any general conclusions relative to the nature of the proteins found in fish muscle; but, apparently, they do not differ greatly from those found in chicken muscle. Fish muscle and chicken muscle are much alike in respect to their content of tygrosine, aspartic acid, arginine, lysine, histidine, and phenylalanine. In discussing the results of Osborne's work, Plimmer[14] says: "It is curious that, as we pass from the lower forms of life to the higher, the amount of glycine, alanine, leucine and proline increase." Okuda and Oyama's analysis of Pagrus major is curiously low in glutamic acid, this may be accounted for by an error in technique.

Inorganic Constituents: The water-free substance of flesh of the common marine fishes contains from about 3 to 11 per cent of ash. The bulk of this inorganic matter in marine fishes consists of phosphates, sulphates, and chlorides. In most fish the amounts of phosphates and sulphates are approximately equal, the dry matter of fish usually containing about 2 per cent of each.

Composition of Roe: No complete analyses of the roe of marine fishes are to be found. Atwater's analysis of shad roe is as follows: water 71.25 per cent; water-free substance 28.75 per cent; fat 3.78 per cent; non-nitrogenous extractive matters 2.56 per cent; and protein (N X 6.25) 20.88 per cent.

Gobley has examined the eggs of carp and determined the following substances: water 64.08 per cent; paravitellin 14.06 per cent; fat 2.57 per cent; cholesterol 0.27 per cent; lecithin 3.04 per cent; extractive matters 0.39 per cent; coloring matters 0.03 per cent; inorganic matter 0.82 per cent.

Greene[15] followed the chemical development of the ovaries of the king salmon during the spawning migration and concluded that the mature ova are characterized by a low content of protein. The protein is at least seventy per cent higher than the yolk of the hen's eggs, but on the other hand the lecithins and neutral fats are less than half the amount stored in the yolk of the hen's egg. Greene's analysis of mature salmon ova follows:

	Total	Water -free	Fat-free
Water	57.68	.....	65.60
Solids	42.32	.....	34.40
Proteins	26.66	63.01	30.33
Phospholipins ...	1.5	3.5	1.7
Neutral fats	12.1	28.5	.....
Ash	0.66	1.56	0.75

Nutritive Value

Various scientists have shown that the proteins of fish are as easily digested as those of beef and many other meats. The fats of both fresh and preserved fish have been found to be nearly completely digestible by man. Rozov[16] reported that 98 per cent of the fat of smoked smelt, and 97 per cent of that of fresh smelt was digested. Milner[17], studying the digestibility of canned salmon, found in four experiments, in which an average of 401 grams of salmon was eaten daily for three days with a simple mixed basal ration consisting of bread, milk, and sugar, that 96 per cent of the protein and 97 per cent of the fat of the fish were retained by the body.

Studying the digestibility of fish proteins with trypsin, White and Crozier[18] found that boiled cod and dogfish were digested more readily than boiled beef.

The results of some recent experiments by Holmes[19] relative to the digestion of mackerel, dogfish, butterfish and salmon by man are shown below.

Number of experiments	Kind of fish	Average amount of fish eaten per day	Digestibility of fish protein per cent	Digestibility of fish fat per cent
3	Mackerel (fresh)	448	93.1	95.2
3	Butterfish (fresh)	471	91.9	86.4
8	Grayfish (fresh)	440	92.8	94.3
4	Salmon (canned)	355	93.2	93.7

Holmes concludes, "Considering the experiments as a whole. the very complete utilization of the protein and fat supplied by the fishes studied, offer additional experimental evidence that fish is a very valuable food and that its extensive use in the dietary is especially desirable."

Space will not permit the citation of the results of the many other investigations concerning the digestibility of fish and fishery products all of which indicate that fish flesh is easily and as completely digested as meat.

Modern Concepts of Nutrition

Until about 1906 most scientists were of the opinion that, if a man or lower animal was fed upon a balanced ration consisting of digestible proteins, fats, carbohydrates and salts in sufficient quantity to liberate in the body the requisite amount of energy, all of the necessary substances for growth and maintenance of weight had been supplied. Since then the researches of Osborne, Mendel, McCollum, Funk, Stepp and many others have shown that the proximate chemical analysis of a food, and a knowledge concerning its digestibility, do not give much information concerning its physiological effects. Whether or not a given diet is satisfactory can only be determined by observations on the health of men or animals restricted to it during considerable periods of time. Foods may be well digested and absorbed, but the substances which reach the blood and tissues may not be satisfactory for the nutrition of the body. Some chemical substances which are indispensable to the body, may be present in too small amounts to admit of the utilization of the other useful ones which although they are abundant, cannot be used to synthesize more complex compounds, no unit of which can be dispensed with.

Because of this, an accurate insight into the nutritive value of fish cannot be gained by a consideration of its protein and fat content and the digestibility of these nutritive substances. The chemical nature of the proteins and the content of certain essential factors called vitamins, must be ascertained.

Vitamin Content

It has been found that in addition to the substances formerly supposed to be sufficient, four other substances called vitamins are requisite for an adequate diet. The first of the four vitamins to be discovered was designated as fat-soluble A. This vitamin has been found to be present in cod liver oil, various fish and whale oils, butter, etc. The second has been called water-soluble B and is the antineuritic vitamin. It is found in yeast, vegetables, nuts, many meats (content low in muscle meats), the germs of grains, eggs, fish roe, etc. The third, the antiscorbutic vitamin, is also soluble in water but is not as widely distributed as the antineuritic vitamin. Drummond named it "C." This vitamin is found chiefly in certain vegetables, such as beets, cabbage, carrots, cauliflower, lettuce, onions and potatoes, and fruits. Cooked fish and most cooked meats are deficient in vitamin C.

But meagre information is available as to the vitamin B content of fish and fishery products. Chick and Hume[20] found it in turbot roe. Drummond[8] reports that cod muscle, herring muscle and salmon muscle are deficient in this vitamin.

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[15] J. Biol. Chem. 48 (1921), 59-71.

Many workers have reported the presence of the fat-soluble vitamin in fish oils and fatty fish. Cod-liver oil is the most potent source of this accessory food factor. Zilva and Miura[21] examined a sample of crude cod-liver oil which was said to be 250 times as potent as butter as a source of vitamin A. This is probably an unusually high figure, but it gives an idea of how large a quantity of this vitamin may be found, and an explanation of the remarkable curative properties of this oil in cases of rickets.

Drummond has shown that herring, whale, shark-liver, and cod-liver oils contain the fat soluble vitamin in relatively large amounts, while lesser amounts are found in salmon and menhaden oils. Mori[22] in 1904 observed that chicken liver and eel fat have for years been used as a domestic remedy for a dietary disease occurring in Japan, resembling that occurring in rats fed upon rations deficient in the fat-soluble accessory, which seems to indicate the presence of vitamin A in eel fat. Hjort[23] found this vitamin in the fat of both cod and herring roe.

During the last three years, there has been much investigation of the relation of certain dietary errors to faulty bone growth. These have proven conclusively that the popular idea which for generations has prevailed, that cod-liver oil possesses a therapeutic value in rickets, is well founded. Since cod-liver oil is very rich in vitamin A, it was postulated by Mellanby that the liberal administration of this dietary factor was a preventative against rickets. Most of the English investigators have accepted the views of Mellanby. In America, McCollum, Simmonds, Becker and Shipley[24] have brought forward strong experimental evidence in support of the view that the substance which plays a role in bone growth is not vitamin A, but another substance found in certain fish-liver oils (cod-liver oil, shark-liver oil, and burbot-liver oil) in considerable abundance. From its properties it seems justifiable to class it with the vitamins. The substance is quite stable and, according to Zucker, can be demonstrated in the non-saponifiable fraction from the hydrolysis of cod-liver oil.

The importance of the antirachitic vitamin content of fatty fish can hardly be overestimated. In many countries where dairy products are high priced and vegetable products are scarce, as in Alaska, Labrador, and Iceland, all the common foods are deficient in this vitamin with the exception of herring and other fatty fish. Doubtless its presence in fish fat prevents the outbreak of rickets and other diseases directly or indirectly caused by a deficiency of this accessory factor. Herring dealers might bring this to the public attention by advertisments such as, "a herring a day keeps the doctor away."

It should be pointed out here that oxidation destroys vitamin A. Smoking herring may destroy a large proportion of its vitamin content. Further researches should be conducted to determine this point.

In this connection it is interesting to consider the original source of the fat soluble vitamin in fish oils. Several observers have found it to be present in much of the feed of marine fishes. Hjort[22] showed that it was abundant in miscroscopic marine diatoms, in the small shrimps and prawns, the roe of fishes, and in green algae which are the food of many fishes. Coward and Drummond[25] reported this accessory factor to be present in green algae, but absent or nearly so in red algae, including Irish moss. Jameson, Drummond and Coward[26] grew a pure culture of a diatom (Nitzschia closterium) in sterilized water, and showed that the product contained large amounts of this vitamin.

This evidence indicates that fishes derive their vitamin from the minute organisms of the water, collectively called plankton, which is directly or indirectly the food of all fish.

Drummond[5] carried out extended feeding experiments with young rats, comparing their growth upon a diet the protein of which was coagulable salmon protein, and one in which the protein was coagulable herring protein, and another in which the protein was coagulable beef protein. He found that the coagulable proteins of the fishes possess a nutritive value quite as high as those derived from beef. However, he adds:

> "In considering these results in the light of their application to problems of practical nutrition, it must be remembered, that fish muscle is relatively poorer in protein than beef and the majority of other mammalian muscles, while the proportion of substances of the the gelatin type which possesses a low nutritive value, is higher in the case of fish. The nutritive value of the total protein present in equal weights of fish and beef, is therefore probably somewhat higher in the case of the latter food."

Summary

In conclusion, the present knowledge concerning the nutritive value may be summarized as follows: Most species of marine fishes vary in fat content with the season, the abundance of food, and the state of development of the sex organs. Certain species of fish, such as the mackerel and the herring, are very fat at certain times and lean in others, while other species, such as the cod and haddock, are always of low fat content. The amino acids making up the proteins of fish muscle are the same as those of chicken muscle, and they are present in approximately the same proportions. Fish contains relatively large amounts of phosporus which may be of value in nutrition.

The proteins and fat of fish are easily digested and compare favorably in this regard with those of beef muscle. Moreover, the coagulable proteins of fish flesh have been shown to possess as valuable nutritive properties as those of beef muscle.

Fatty fish, and especially fish livers, contain large amounts of the fat-soluble vitamin A and are valuable sources of this essential food factor. Fish-livers are potent sources of the antirachitic vitamin, and the liver-oils posess valuable therapeutic properties in the treatment of rickets.

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[1] This article is extracted from a chapter in "Marine Products of Commerce: Their Acquisition, Handling, Biological Aspects and the Science and Technology of their Preparation and Preservation by Doald K. Tressler, to be publshed by the Chmeical Catalog Co., New York City, in the near future.

[2] 26 Ann. Rept. Fishery Board Scotland (1907), 37.

[3] Bureau Fisheries. Doc. 884, 1920; also Rept. 1919, iappendix 5.

[4] J. Ind. Eng. Chem 10 (1918), 471.

[5] J. Biol. Chem. 23 (1918), 483-498

[6] J. Biol. Chem. 48 (1921), 93-103.

[7] J. Biol. Chem. 48 (1921), 73-82.

[8] J. Coll. Agr. Imp. Univ. Tokyo, 5 (1912-1916), 25-31.

[9] J. Physiol. 53 (1918-19), 95-109.

[10] Am. J. Physiol. 23 (1908), 81.

[11] J. Coll. Agr. Imp. Univ. Tokyo 5 (1912-16), 365-72.

[12] J. Coll. Agr. Imp. Univ. Tokyo 7 (1919), 1-28.

[13] J. Coll. Agr. Imp. Univ. Tokyo 7 (1919), 29-37.

[14] The Chemical Composition of the Protiens. Part 1—Analysis. London, 1917.

[15] J. Biol. Chem. 48 (1921), 59-71.

[16] Comparative Assimilation of Fats from Fresh and Smoked Fish (Russian Diss., Imp. Mil. Med. Acad. (St. Petersburg), 1891.

[17] Conn. Agr. Ex. Sta., Rept. 1905, 142.

[18] J. Am. Chem. Soc. 33 (1911), 2042-48.

[19] U. S. Dept. Agr. Bull. 649 (1918).

[20] J. Royal Army Med. Corps 29 (1917), 121-59.

[21] Lancet 200 (1921) 323.

[22] Jahrbuch f. Kinderheilkunde 59 (1904), 175.

[23] Royal Soc. Proc. 93B (1922) 440-49.

[24] J. Biol. Chem. 53 (1922), 293-312.

[25] Biochem. J. 15 (1921), 530-9.

[26] Biochem. J. 16 (1922), 482-85.

Publicity Needed To Sell Fresh Fish

A well known New England fish man say that the present irregular sale of different varieties of fresh fish could be made more general if the fishing industry would study and adopt some of the methods used by other successful industries in popularizing their products. In a recent issue of the "Modern Merchant and Grocery World" the statement is made that because the average consumer is familiar with only a few varieties of fish, the demand is limited to those varieties.

The logical way to create demand is to advise the consuming public of the wide range of variety in food fish. The result will be the use of seasonable fish at reasonable prices which will benefit both the industry and the consumer.

Specialty Manufacturers Convention

(Continued from page 469)

ucts of our members, and this can be accomplished through intelligent selling.

Let us observe in every way the code of ethics not only as it applies to ourselves but to the distributor as well. Let not our ambition be confined to getting the retailer's signature on the dotted line but let our aim be to make the retailer a salesman for our products, and this lasting and enduring benefit can only be had by and through proper salesmanship.

Let us build solidly and permanently.

Let us build for the future.

Let us make haste more slowly.

Let us never forget that we reap as we sow.

The National Government during the past year has through the activities of the Department of Commerce taken up the question of elimination of useless sizes of both consumer and shipping containers through the division of simplified practice. Our association through its able chairman of our standardization committee, Mr. Louis McDavit, has lent every possible aid.

The Department of Commerce has also created a special domestic commerce division of distribution. Our association likewise is cooperating through its merchandising committee of which Mr. F. D. Bristley is chairman. Further details will be duly submitted to you in their proper order.

It has been the pleasure of your president to represent the association in the better business bureau of the National Retail Grocers' Association. The work of this bureau has our most hearty endorsement, financially and morally.

You are all familiar with the code of ethics relating to merchandising. The able author, Mr. F. D. Bristley not being content to rest upon his laurels, is formulating a similar code for the care of stocks.

Report of National Secretary

By H. F. THUNHORST

Your secretary, during the past year, has addressed different meetings of wholesale grocers and takes this opportunity to express his appreciation of the many courtesies extended to him not only at meetings but on personal calls as well. The many assurances of support is most gratifying.

The national office is constantly sending our publicity matter to both jobbers and retailers affecting the work of our association. We are indebted to the many jobbers who are cooperating with us.

The association in past years has done much in the betterment of taking care of stock and reducing the claims for spoiled goods with most gratifying results.

The Standardization Division of the Department of Commerce, Washington, D. C., called a meeting of different association secretaries on December 15, the object being to further the work of this division. Your secretary attended this meeting and attended another meeting of this division called for January 16.

Your secretary attended: the National Canners Convention, Atlantic City, January 23; addressed the Philadelphia jobbers, January 30; spoke at the convention of the West Virginia Wholesale Grocers' Association, Parkersburg, W. Va., April 14; made a three weeks' trip South, addressing and getting in personal touch with jobbers; attended the National Wholesale Grocers Convention at St. Louis, May 16, stopping en route at Pittsburgh, Cleveland, Dayton, Cincinnati, and Indianapolis, calling on members, jobbers, and prospects, and addressing meetings of our former auxiliaries; attended the convention of the American Wholesale Grocers' Association, Washington, May 23; the convention of the National Retail Grocers' Association at St. Paul June 25.

The Domestic Commerce Division of the Department of Commerce called a meeting of the committee appointed by our President for August 16. The national secretary attended with the members of this committee, as also the meeting held on September 6.

Further activities of the national office are recorded in the reports of the chairmen of different committees.

The Retailers' Program

The National Association of Retail Grocers' was represented by H. C. Balsiger who brought greetings from that organization. He emphasized in his address the need of intelligent understanding and harmonious relationship between all agencies in the manufacture and distribution of food. In his opinion the retail distributor is an essential element in the business of the specialty manufacturer—he is the key man to the entire business structure.

The constructive work of the National Association of Retail Grocers was outlined. They are publishing the National Grocers Bulletin which is of interest to the specialty manufacturer because the grocery trade press is an institution of distinctive place and value as a medium through which the manufacturer and wholesaler can reach the retail distributor. In National food shows the grocers are in a position to develop a service which has a real purpose.

The educational feature of their program is the development of the Better Grocers Bureau to be operated as a special department of the association, in charge of a director particularly qualified for work of that character. Presidents of national food trade organizations whose members will be invited to associate membership have been requested to serve on an advisory board, it is the intention to have this bureau in operation by the first of the year and it is the hope of the organization that they have the cooperation of all specialty manufacturers.

Report of Publicity Committee

By J. GRAHAM WRIGHT

It has been the aim of the publicity committee during the past year to continue the work of acquainting dealers, both wholesale and retail, with the work and object of our association.

Through the system of mailing cards to every jobber we have reached those interested in all parts of the country, spreading the gospel of the need of the proper care of specialty orders, the proper care of stock and turning out old stock first.

Retail envelope folders, calling on the retailers of the country to accept delivery of specialty orders when duly given, have been sent to 241 jobbers—a total of 245,000 having been distributed. The address of our counsel, Mr. Charles Wesley Dunn, was printed and distributed to jobbers, members and prospects. The code of ethics has been generally distributed, a total of 15,200 being sent out. 1375 Warehouse Signs "Turn Out Old Stock First" have been sent to jobbers.

The address of Mr. F. D. Bristley, delivered at Philadelphia on March 8, 1923, was printed in book form and sent to all jobbers, prospects and members.

131 Member Bulletins have been sent out during the past fiscal year.

Report of Membership Committee

By B. F. AMOS

During the past year 23 new members have been admitted, as follows:

Dairymen's League Cooperative Association.
Wm. Wrigley, Jr., Co.
Frank P. Kruger.
Niagara Alkali Co.
Chas. F. Mattlage & Sons.
Washburn Crosby Co.
Bonded Products Co.
J. L. Kraft & Bros. Co.
Robert A. Johnston Co.
Canada Dry Ginger Ale, Inc.
R. M. Hollingshead Co.
Malted Cereals Co.
The Vanco Company.
Battle Creek Food Co.
Haskins Bros. Co.
Kafex, Inc.
Fruit Valley Corp.
Pennsylvania Soap Company.
Quaker Oats Company.
Burnham & Morrill Co.
Silver King Mineral Water Co.
Was-Cott Corporation.
Clow Milling Co.

Better Merchandising Standards

By F. D. BRISTLEY

Chairman Merchandising Committee

Since our last convention there has been in the public press and in communications received by our national office, unjust and unethical criticisms of our members and their sales representatives, all of which the chairman of your merchandising committee has endeavored to answer in a manner befitting the dignity of our association.

There is, however, one unethical practice indulged in by the salesmen of some manufacturers which I think deserves mention, and that is, the complaint so frequently heard from the wholesale grocers, that some specialty salesman shop around from one wholesale grocer to another, obtaining the best discount the wholesaler will permit the salesmen to offer to the retail trade on his specialty orders, and then conveying such information to the retail dealer, the result of which is that the wholesaler offering the largest special discount receives the bulk of that salesman's orders. This unfairly disorganizing practice is, in my opinion, to be severely condemned.

One of the greatest problems confronting the members of this association and the problem on which the foundation of this association was organized is that of the specialty order. Eternal vigilance on the part of your association, and especially on the part of your general secretary, have gone a long way towards commanding respect for specialty orders bearing the stamp of our association. But I regret to report that especially in some of our larger commercial centers, carelessness and indifference, plus, in some instances, greed on the part of certain wholesale grocers to substitute their private brands when filling specialty orders has evidently influenced a number of our influential members to adopt a direct delivery system to the retail dealer at such points, and unless our wholesale distributors wake up to the significance of these new conditions, for which they are evidently responsible, there is likely to be a general trend in that direction on the part of other manufacturers. And it may not be amiss at this particular part of your chairman's report to point out the important fact that when a manufacturer is forced not only to sell his goods to the retail dealer, but to deliver them as well, there remains but one link, and that is invoicing and collecting, to complete the chain of direct distribution. Let us hope that our wholesale distributors will grasp the significance of these conditions as they exist today, and stem the tide before it is too late, and this can be done if they will live up to the code of ethics as it relates to the wholesale grocer.

F. D. Bristley

The Code of Ethics

The code of ethics of the specialty order, as endorsed at our last convention, which also had been endorsed by the National Wholesale Grocers Association, the American Wholesale Grocers Association and the National Association of Retail Grocers, has since been endorsed by others.

Fifteen thousand two hundred of this code of ethics booklet have been distributed among the trade and 245,000 copies of the envelope slips of this code relating to the duties of the retail grocers have been distributed.

During the past year, your merchandising committee has been collecting, through our national secretary, data relating to the proper storage, handling, and care of food and other grocery products of our respective members. Most of our members have responded to our request for information; others have not. We found it impossible, however, to cover as we should like to have done, all of the items manufactured by our members, but with the able assistance of our efficient counsel, Mr. Charles Wesley Dunn, we have put in as compact form as possible, a code on the proper care, storage and handling of food and grocery products, which is endorsed by the officials of the four leading national associations, and which we are now submitting for our final approval.

Code of Ethics as Adopted by Association

Introduction

It is the unquestioned duty of all manufacturers and dealers, and hence of the organizations representing them, to exert every effort to prevent the loss or deterioration of foods and other grocery products due to the pursuit of improper methods of manufacture, packing, storage, handling and shipping, and thus to conserve the nation's product supply and to enhance its economic welfare. In recognition and realization of this duty we present a statement of what we conceive to be the fundamental obligations of the manufacturer and dealer, in this respect, supplemented by specific instructions as to the proper storage of particular products. We also set forth the recent rule of the United States Department of Agriculture against the return of decomposed foods in the course of interstate commerce for the purpose of reimbursement, promulgated for use in the administration and enforcement of the Federal Food and Drugs Act. Dealers should also be familiar with any similar rule adopted by the state or municipality under the local food or health law.

Code In Two Parts

The Manufacturer — It is the obligation of the manufacturer:

1. Properly to manufacture, pack, store, handle and ship his products and to sell and deliver the older stock first. Hence it is his duty (a) to keep his factory in a clean condition and to operate it in a sanitary manner; (b) to use pure and wholesome materials and to employ right methods in the manufacture of his products; (c) to pack and ship his products in suitable containers, to handle them with due care, and to caution the carrier so to handle them; (d) to store his products where they will not be exposed to injurious heat, cold, dampness or contamination, and (e) to maintain his stock in such an orderly array that the older stock will be delivered first.

2. To instruct all who deal in his product how properly to store, handle and care for them and to inspect the stock of his products in the possession of dealers with their consent, to insure the proper storage, handling and care of such products and to ascertain whether any are unsalable.

3. To protect all who deal in his products against loss or liability arising out of his fault.

4. To refrain from overstocking the dealer.

The Dealer — It is the obligation of the dealer whether wholesale or retail:

1. Properly to store, handle and care for the products purchased and sold by him and to sell and deliver the older stock first. Hence it is his duty (a) to keep his place of business in a clean condition and to operate it in a sanitary manner; (b) to handle his products with due care; (c) to store and display his products where they will not be exposed to injurious heat, cold, dampness or contamination, and (d) to maintain his stock in such an orderly array that the older stock will be delivered first.

2. Promptly to notify his seller of the receipt and condition of products damaged in transit and to make due claim against the carrier for such damage.

3. Promptly to notify his seller of the possession and condition of unsalable products, and to withdraw them from sale immediately upon their discovery; to comply with any and all Federal, State and municipal regulations against the return of spoiled foods, for the compulsory destruction of which equitable adjustment should be promptly made.

4. Always to purchase prudently and not in excess of his measured ability to buy and duly sell.

Meat Packers Hold Eighteenth Annual Meeting

Convention at Atlantic City Indicates That Packers Are Thinking About Fundamental Things

THE Institute of American Meat Packers convened at Atlantic City, September 17-19, for their eighteenth annual meeting. Officers elected for the coming year are as follows:

President—Chas. E. Herrick, Brennan Packing Company, Chicago.

Vice-President — C. B. Heinemann, Chicago.

Vice-President—W. W. Woods, Chicago.

Vice-President—E. C. Merritt, Indianapolis Abattoir Company, Indianapolis, Ind.

Vice-President—J. C. Dold, Jacob Dold Packing Company, Buffalo, New York.

Vice-President—J. J. Felin, John J. Felin & Co., Inc., Philadelphia, Pa.

Treasurer—John T. Agar, Wm. Davies Company, Inc., Chicago.

Central Administrative Committee—C. E. Herrick, Brennan Packing Company, Chicago; Thos. E. Wilson, Wilson & Company, Chicago; G. F. Swift, Swift and Company, Chicago; T. Davis Hill, Corkron Hill & Company, Baltimore, Md.

Institute Plan Commission—Thos. E. Wilson, Chairman, Wilson & Company, Chicago.

Directors (3-yr. term)—J. E. Decker, Jacob E. Decker & Sons, Mason City, Iowa; F. S. Snyder, Batchelder & Snyder, Boston, Mass.; R. T. Keefe, Henneberry & Company, Arkansas City, Kans.; Fred. Guggenheim, Guggenheim Bros., Chicago; Myron McMillan, J. T. McMillan Company, Inc., St. Paul, Minn.

Directors (2 year term)—J. Ogden Armour, Armour & Company, Chicago; J. A. Hawkinson, Allied Packers, Inc., Chicago; Thos. E. Wilson, Wilson & Company, Chicago; T. Davis Hill, Corkran-Hill & Co., Baltimore, Md.; T. P. Breslin, Standard Packing Company, Inc., Los Angeles, Cal.

Directors (1 year term)—Edward A. Cudahy, Jr., Cudahy Packing Company, Chicago; G. F. Swift, Jr., Swift and Company, Chicago; Oscar G. Mayer, Oscar Mayer & Co., Chicago; W. H. White, Jr., White Provision Company, Atlanta, Ga.; J. A. Wiederstein, John Hoffman's Sons Company, Cincinnati, O.

Achievements of the Past Year

The American Institute of Meat Packers has embarked upon a new development under which it will ultimately become a combined trade association, industrial museum, research institution, and educational institution, according to Charles E. Herrick, president of the institute in his opening address. A resume of the most important achievements of the institute during the past year was followed by a consideration of the present condition of the industry. Mr. Herrick expressed the opinion that the increase in the production of meat indicates that the meat packing industry is recovering from the readjustment period following the war, and is facing a brighter future.

In comparing present and pre-war prices, the speaker stated that the present wholesale prices, are unusually low. The domestic demand is good because the consumer has found that meat really is cheap and he is buying it. "Last year meat produced under Federal inspection represented approximately two-thirds of the total meat products of the United States. Upon analyzing the figures we find that this increased production has been due largely to the increased killing of hogs. The numbers of cattle, calves, and sheep dressed under Federal inspection during the first seven months of this year have been only slightly greater than for a similar period a year ago, but the number of hogs dressed has increased about 25 per cent.

"A part of the increased production of meat has been absorbed by the export trade, but although this has been about thirty-three per cent heavier than a year ago, the increase in the quantity exported, as compared with a year ago, has amounted to only a small percentage of the increased production.

"Thus it is evident that only a small percentage of the increased production of pork has been put into cold storage warehouses. The rest of it has gone into domestic consumption. This statement is borne out by the figures of the United States Department of Agriculture which show that the consumption per capita of Federally inspected pork for the first half of the current year was approximately 25 per cent greater than for the same period a year ago. The consumption of beef, veal and lamb showed little change. The figures show that the principal meats—carcass beef, veal and lamb, pork loins, fresh picnics, and butts and such cured products as hams, picnics, bacons, bellies, backs, and lard——have declined from 22 to 65 per cent from peak prices.

Lower Prices for By-Products

"By-products prices particularly in the case of hides, are generally lower than before the war, but on the other hand, live stock prices, with the exception of hogs, are substantially higher than in 1913.

"As an interesting supplement to these statistics the retail price quotations issued by the United States Bureau of Labor Statistics show that during the first seven months of this year —more recent figures are not available—the meats listed by the bureau averaged from 4 to 8 per cent lower in price, as compared with 1913, than all articles listed by the bureau. This indicates clearly that meat is one of our cheapest foods.

"The value of our products has fallen approximately as rapidly and as far as the value of the producers' raw material; and both our product and the producers' product have declined more than those of other industries. In brief, it is a very graphic example of the mutuality of interest between producer and packer."

The president of the meat packers spoke of the packer as the producers' sales agent. "For too long," he continued, "the packer has been looked upon as the ultimate market for the producers' product, when as a matter of fact, the consumers of this and foreign countries are the ultimate customers of the American live stock producer, and what they can and will pay for his product in the form of meat determines what he receives for his live stock."

Some of the packers difficulties as a sales agent were mentioned. For example when large quantities of heavy beef or hogs have been available, housewives have clamored for light pork loins and lean bacon. As a result the producers' sales agent has found it exceedingly difficult to market some of the products.

After emphasizing the need of cooperation between the packer and the producer and his hope that the solution of their mutual problems was near at hand, Mr. Herrick said in conclusion:

"With improved relations with producers and retailers of meat, with a growing appreciation among consumers of the economic and nutritional importance of our product, as well as of the essential service which our industry renders, and with a high conception of our duty to serve the public, cheaply, efficiently and well. I believe that we can face the future with confidence.

"In all of the accomplishments which I have mentioned, the institute has played an important part; in fact, many of our accomplishments have been possible only through its efforts. As time passes, I have no doubt that the Institute will continue to further enlarge its activities in behalf of this great industry, thus justifying the wisdom of its founders and a continuation and enlargement of your support."

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A modern service to increase manufacturers' profits on sales operation is offered food manufacturers by a seasoned market and advertising executive in co-operation with The American Food Journal.

This service is available to a limited number of food manufacturers on a yearly retainer or a fee basis.

Correspondence invited.

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Facts About Los Angeles

Largest city in America west of Mississippi River.

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County seat of richest agricultural county in America, many of the crops being peculiar to itself.

Makes 85 per cent of all motion pictures in the world.

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Ninth city of country in wealth; first in bank clearings.

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What Other Speakers Said

The determining factor of profit and loss in the packing industry today is the degree of intelligence which is displayed in buying operations, according to F. Edson White president of Armour and Company, in an address to the Institute. Mr. White pointed out the difficulties in buying live stock which do not exist in the buying of other commodities, and gave some very sound advice to buyers exposing the fallacies in various theories upon which much of the buying is based. In conclusion he said, "Let us cultivate our outlets instead of our inlets and let us gauge our inlets by the outward flow of our product rather than the inward flow of our competitor. After all it is only when we buy on the safe and sane business that we can expect to find something in the till when the year is over."

In a discussion of the economics of operation in the industry, one of the points emphasized was the need of standardization both of plant volume of product, and of all operating factors. If a definite volume in any department has been set to represent a day's work, it is not possible to consistently increase the volume and expect full efficiency.

One speaker stated that efficiency in a packing plant is not only good business but a public duty since meat packing is a fundamental business carrying with it a grave responsibility. Raw material must be converted into the highest realizable product at the least possible expense of conversion, and the lowest necessary toll exacted for the service. "If we do not do so we are rightfully subject to criticism either from the producer of live stock or the consuming public, for we have taken from one or the other. We likewise have not benefited our stockholders or ourselves, for we have not added to the world's wealth if we needlessly destroy or waste through our failure to use the many years of training of individuals and the evolution of the industry to accomplish our purpose."

Other economic phases of the industry including effective selling, wholesale and retail costs were also presented at this session.

"Helpful Cooperation" was the subject of an address given by Dr. John R. Mohler, chief of the Bureau of Animal Industry, who expressed his desire that there might be a continuance of the cordial relations and cooperation which have long existed between the packers and the Bureau.

One outstanding feature of the program was the presentation of the educational program being worked out in cooperation with the University of Chicago. Three important phases of this program are: the night course to take care of employees in Chicago, the correspondence course for those outside the city, and the four year college course for young men looking forward to entering the meat packing industry both in Chicago and elsewhere. This latter course will give the men an all around education the same as any other four year college course, and at the same time they will specialize and direct their thought and ambition throughout the course to the problems and opportunities of the packing industry.

Some Research Problems

There are three big subjects upon which there is need of more scientific research, according to W. D. Richardson, vice-chairman of the committee on scientific research. The three are: nutrition, preservation of products and the better use of by-products. The speaker said, "The industry today is older and wiser than in the pioneer days, and I believe that a general survey of the possibilities of our industry by this scientific committee, as well as the committee on practical research, can only result in immense good and profit to the entire packing industry."

The value to the meat packing industry of cooperation with trade organizations and associations and government bureaus in the investigation of problems of mutual interest, was emphasized. The bureau of scientific research is initiating such cooperation both in the collection of valuable information and data which will be of value to the members in purchasing supplies and equipment, and in the development of cooperative research.

The Educational Program

Another very interesting report was that of W. W. Woods, vice-president in charge of the department of education and research. This department includes: the bureau of public relations, the bureau of nutrition, the bureau of home economics, the bureau of merchandising, the bureau of industrial education, and the bureau of scientific research. Some of the aims of this department are as follows:

1. Correct popular misunderstanding about the food value of meat and disseminate printed information to specialists about the place of meat in the diet. (Bureau of Nutrition, et al.)

2. Correct published misinformation about meat packers, their operations, their profits and the price of their products. (Bureau of Public Relations.)

3. Explain, by speakers, exhibits and motion pictures, facts important to the packing industry. (Bureau of Public Relations.)

4. Assist the packers to move surpluses of a particular product through poster advertising, dealer cooperation, stimulation of sales effort, and preparation of copy for possible use by individual packing companies, dealers and others in their advertisements—as in the ham campaign and many features of "Meat for Health" Week. (Bureau of Public Relations.)

5. Keep members better informed on conditions in the entire industry through statistics, and weekly and monthly reviews of the meat and live stock situation. (Bureau of Public Relations.)

6. Promote among live stock producers a better understanding of the packers' service and of trade conditions—as in the Meat and Livestock Digest. (Bureau of Public Relations.)

7. Promote better merchandizing of meat at retail, with a view to increased consumption of meat, and a better feeling on the part of the dealer toward the packer. (Bureau of Merchandizing.)

8. Establish what the average expenses of selling meat at retail are, so that any dealer may check every item of his costs against the average and "spot" his leaks. (Bureau of Merchandizing.)

9. Persuade the dealers to advertise meat, to push the cuts that are "dragging" and to disseminate among their customers and passers-by, printed information on the food value of meat. (Bureau of Merchandising.)

10. Carry facts about meat, its food value and uses, to teachers, home economists, dietitians, et a. (Bureau of Home Economics and Bureau of Nutrition.)

News of Other Conventions

Readers wishing information concerning papers or proceedings of the following conventions which have been held recently, may secure such material from The American Food Journal. Stories of these conventions will appear in this magazine from time to time.

World's Dairy Congress, Washington, D. C., and Syracuse ,N. Y., October 2-10.

National Chain Store Grocers' Association, New York City, September 20, 21.

National Coffee Roasters' Association, Boston, October 15, 16.

American Bakers' Association, French Lick, Ind., September 10-15.

"Nucoa" Wins Injunction Against Milk Association

The United States District Court of the Western district of Michigan has issued an injunction against the Allegan Milk Producers' Association on complaint of The Best Foods, Inc., a New Jersey corporation, which charged that the milk association was illegally combining and conspiring to boycott or prevent the sale of the company's product, a nut margarin sold under the trade name of "Nucoa."

The court's injunction restrains the milk association from doing any of the acts which had been complained of, namely the publishing and circulating of letters or other written or printed statements, or in any other way committing acts which would have the effect of interfering with the sale and distribution of "Nucoa."

The FOOD Problem and Trained Nurses

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BOOK REVIEWS

Chemical Engineering Catalogue, 1923 (Eighth Annual) Edition, The Chemical Catalog Company, Inc., 19 East 24th Street, New York. Leased for a period of one year to Chemical Engineers, Works Managers, Heads of Chemical Departments in Universities, Industrial and Research Chemists, Technical Departments of United States and Foreign Governments, Libraries ad Foreign Chemists and Engineers. To those not included in the above list there is a charge of $10.00.

So important is the work of the industrial chemist and engineer that this new edition of what may be called the official guide of the chemical world is assured aforetime of a welcome from the fields for whose information it is issued.

The main purpose of the book is to inform rather than to approach its field in the form of advertisement. Exaggerated claims are rigidly excluded and the carefully collated text may be relied upon to serve as guide to those interested in precise data, such as specifications, construction details, tables of sizes and capacities, and specific uses or adaptations of equipment and materials.

Food and beverage manufactures make up one of the two dozen or more industries to which the catalogue will carry practical help. That the food manufacturer will find much that is of interest in many of the sections, however, is indicated by the fact that makers of cloth for filtration of fruit juices, fish oils, cider, beet and cane sugar and other food products are listed, together with information regarding their service to allied fields.

Economics of the Household. Its Administration and Finance. By Benjamin Andrews, Ph.D., Associate Professor of Household Economics, Teachers' College, Columbia University. The Macmillan Company, New York. $3.25.

Every householder, man or woman and every teacher of home economics, will wish to add Dr. Andrews's book to his library, while manufacturers engaged in the distribution of food products will be interested in his chapters on the economics of food.

The book is a comprehensive discussion of various aspects of the problems of living as met today, and the author proves his scholarly attitude of mind, which yet needs no proving, by his realization of the inter-dependence of the different divisions of the food field. For example, on page 285 we find a discussion of commercial foods, with illustrations drawn from the fine work of the National Canners Association in solving one important phase of the food problem.

Food Planning and Preparation. A Junior Course in Food Study With Recipe Book for use at Home and at School. By Mabel T. Wellman, Professor of Home Economics, Indiana University. J. B. Lippincott Company, Philadelphia, Chicago and London. Illustrated.

One of Lippincott's Unit Texts, Miss Wellman's book presents a direct method of teaching children in terms of their own interests and activities. Practical household facts which they need to know are given and relationships in the family are discussed in a manner singularly understanding both of the teachers' problems and of the psychology of home life. The author uses to good account her experience in Junior Red Cross work, and after reading her little book the educator and layman will unite in the conclusion that she has accomplished her purpose, viz.: the preparation of a book that will help teachers and mothers to cooperate in their efforts to make girls "enjoy taking part in family life."

One outstanding feature of the book is its successful approach to the girl whose home life has held no refinement of customs, nor niceties of service. Miss Wellman makes valuable suggestions to the teacher who has students from this group.

Emphasis is laid on the relation of home making to health and the children who come even indirectly under the influence of the book are certain to be the better, both physically and spiritually.

Practical Dietetics. Diet in Health and Disease. (new ed.) By Alida Frances Pattee. Published by the Author, Mount Vernon, N. Y. $2.25.

A new and revised edition of Miss Pattee's handbook for nurses and domestic science teachers. The subject is treated in a broad manner, one feature being the paralleling of diet information with appropriate recipes for preparation of such dishes as are discussed in the chapters on feeding in health and in disease.

A Teacher's Dietetic Guide in pamphlet form accompanies the book.

Cooking for Profit. Catering and Food Service Management. By Alice Bradley, Principal, Miss Farmer's School of Cookery. American School of Home Economics. Chicago. $2.50.

Written by an expert this practical hand book is already proving invaluable not alone to managers of tea rooms and other commercial enterprises but also to teachers in those institutions whose aim is to fit students for applying their specialty of foods work in the world of business.

The plan of the book provides for systematic discussion of specialty cooking, candy making, catering, guest house management, industrial meals, tea room management and cafeteria work.

The material is presented clearly, the directions are easily adapted to individual circumstances and the book should really prove indispensable for those engaged in any form of commercial cookery.

Industrial Filtration. By Arthur Wright, M.E. The Chemical Catalogue Company, Inc., 19 East 24th Street, New York. $5.00.

This is Volume I of The Modern Library of Chemical Engineering. The book is planned and written for plant chemists and engineers, superintendents, foremen and operators. It is written in non-technical language, so that purchasing agents and managers may have no difficulty in understanding the chapters that aim to help them decide how to select the special type of filter best fitted to their needs.

The theory of filtration is followed step by step, processes are described in detail and chemical engineers may approach the volume confident in their expectations that they will find much that is practical and illuminating.

A Book of Unusual Soups. By Mary D. Chambers. Little, Brown and Company, Boston. $1.50 net.

Opening with a brief discussion of the importance of soup in the well planned menu and our supposed national indifference toward this savory article of food, Miss Chambers proceeds to a series of helpful and interesting chapters. Soup making in all its phases is set forth; cautions as to cookery processes so as to achieve the best results; suggestions in regard to unusual foundations for soups, whether stock or puree; lists of unusual flavorings; accompaniments and garnishes; these are some of the topics and the author has woven them into a handbook that is of interest to teacher, to housewife, and, indirectly, to the food manufacturer, since in the chapters on new varieties of soups are hints to manufacturers of puffed grains, of crackers and biscuits and other products.

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DIGESTS FROM FOOD MAGAZINES

The Bread of Life

"There is at present greater interest in eating for health than at any time in the past," says Dr. E. V. McCollum in an address published in a recent issue of "Baking Technology." Modern research has emphasized the selection and combination of foods so as to form diets which are complete for growth and maintenance of health. The dietary system recommended by Dr. McCollum includes more dairy products and leafy vegetables than are generally used, together with an increase in the consumption of fresh uncooked vegetables and fruits. Such a diet should in his opinion "safeguard the factor of quality in our food so as to markedly improve the nutrition of children who grow up on this regimen."

"That white flour is deficient in several respects does not justify the conclusion that white bread should not be eaten. The point is that it should be supplemented with such foods as make good its shortcomings. . . . So far as we know, the simplest, cheapest and most effective way to improve the quality of bread is to introduce more milk solids into its composition. This improvement is sound from the physiological, agricultural, and economical standpoint, as well as being sound in that it does not run counter to our established dietary habits."

"We do not require bread to supply everything that is necessary and in optional amounts for satisfactory nutrition but only that it be excellent from a standpoint of nutrition."

Utilizing Cannery Products

Some practical suggestions for the better utilization of cannery by-products are given by W. V. Cruess of the University of California in a recent number of the "Canning Age." The uses suggested would be an advantage not only from the standpoint of money making but also to add to the reputation of the industry. Instead of canning so much pie fruit and second grade fruit, Mr. Cruess advises using these fruits in the following ways: to prepare the fruit for use in candy, to save freight and containers by dehydrating the fruit that is suitable for that purpose, to make more juices and sirups from over ripe berries and other juices, and to use pears and plums in jellies and jams.

The use of many tomato by-products is fairly well known to those in the canning industry. Mr. Cruess urges that less of these tomato products be used for food products and that more be used for oil and stock food. At one time Germany imported most of the apricot pits of California and exported to us the oils, cosmetics, etc., made from them. "There is no reason why apricot, cherry, and peach kernels should not be used to make products identical in composition with sweet oil, bitter almond oil, and macaroon paste." Much of the waste left from asparagus canning might be dried and mixed with other dried vegetables in soup mixtures.

The Standardization of Meat Grades

That uniform cuts as well as uniform classes and grades of meat would be of benefit to the industry is the opinion of Walter C. Davis of the Bureau of Agricultural Economics according to a recent issue of the "Grocers Bulletin." As the result of the custom adopted in the early days of commercial meat packing, pork cuts are standardized to a marked degree, but the same cannot be said of beef, veal, lamb and mutton.

Unfortunately the determination of a basis for the grading of live stock and meats is extremely complicated because of the variation in animals and the difficulty in measuring quality. The three factors on which the grades of meat are based are conformation, finish and quality.

"Each market has its own peculiar ideas concerning the shape of wholesale cuts and there are almost as many different methods of dividing carcasses into cuts as there are large consuming centers in this country. There can be no possible advantage derived from such a diversity of methods, and while these conditions continue there can be no basis for determining uniform yields on the basis of grades."

Fuel Situation in the Home

"The fuel problem is the biggest problem facing the American people today," states Samuel S. Wyer in the October issue of the "Journal of Home Economics." "The reason we have a fuel problem today in this land of plenty," he continues, "is because we have been so prone to accept beliefs rather than square our living conditions to actual facts that must ultimately control. The public's views on important utility problems are often wrong because of ignorance of real facts. The easiest way to get a correct public opinion regarding fuel is to get accurate information into the home, because that is where the fuel industry makes its personal contact."

Anthracite coal has gone into the luxury class, oil cannot be used for house-heating service because of its cost, and electricity will not be generally used because the amount of coal required to generate electricity is six times that required for manufactured gas. For this reason Mr. Wyer predicts that there will be increased use of gas for cooking, heating water, and incidental house heating. "Gas, however, will not solve the general house heating problem; for this there must be an increased use of bituminous coal and this must be in the form of coke in order to cope with the smoke nuisance. What is needed now is not more research but more diffusion of the information available for immediate use."

The Relation Between Insect Growth and Moisture in Dried Fruits

Results of a series of experiments conducted by A. W. Christie and C. E. Woodworth of the University of California are given in a recent issue of the "Western Canner and Packer." These experiments were instituted to ascertain the effect of different moisture contents in dried fruits on the development of insects. The summary of their conclusions is as follows:

1. Protection from insect infestation by reduction of the moisture content of dried fruits to 10 per cent is not feasible for the following reasons:

   (a) Such a low moisture content is only attainable by slow and expensive dehydration and darkens the color of the fruit.

   (b) Unless packed in moisture-proof containers the fruit would reabsorb moisture from the air.

   (c) A serious reduction in the weight of dried fruit sold by the producer would result.

   (d) The fruit would be less palatable to eat in the raw condition and would require longer soaking and cooking.

2. Protection from insect infestation by the use of a moisture content of 26 per cent or above is not feasible for the following reasons:

   (a) Unless packed in moisture-proof containers evaporation would soon reduce the moisture content, at least on the surface, to a point where insects could develop.

   (b) Prunes containing 26 per cent or more of moisture eventually become moldy.

   (c) Apricots become moldy at 24 per cent moisture unless resulfured.

   (d) Proposed federal standard of not over 24 per cent moisture in dried fruits may prevent higher moisture contents.

3. Since the average moisture content of bulk stored dried fruits is in the neighborhood of 18 per cent, which is shown to be the optimum moisture content for insect development, the importance of proper methods of storage and fumigation is emphasized.

4. The logical control of insects in dried fruits lies in the use of absolutely insect-proof containers following destruction of all insect life by heat or fumigation.

The American Food Journal
The National Magazine of the Food Trades
Established 1906
Vol. XVIII NOVEMBER, 1923 No. 11

Value of Cereals Established by Research

Present Knowledge of Food Values Makes It Incumbent Upon Food Manufacturer to Know His Product

By M. S. FINE, Ph.D,
Director Research Department, Postum Cereal Company, Inc.

ACCUMULATED knowledge regarding the composition and nutritive values of foods has reached a sufficiently high state of advancement to make it incumbent upon the food manufacturer and distributor to know his products—their chemistry, nutritive values, and the position which they should occupy in the diet with reference to other foods. Such information is necessary if he is to advertise his products truthfully and with due regard to other components of our dietary. Such information, moreover, is very likely to disclose unsuspected possibilities for improving the product or the process of manufacture. There are responsibilities and opportunities here which the food manufacturer should recognize. Evidence is not wanting that manufacturers are indeed rising to the situation and adopting appropriate measures.

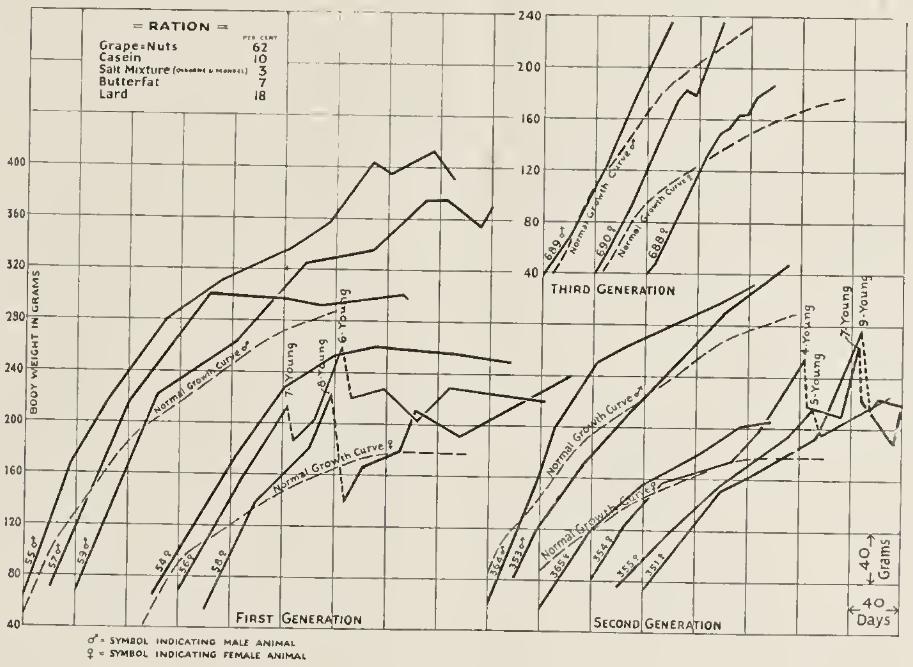


Chart I

That vitamins are essential for perfect state of nutrition is generally conceded. It is likewise accepted that our main reliance for a suitable supply of vitamins must be upon the food we consume. It is well known also that foods vary greatly in vitamin potency, and hence it becomes a matter of importance to select our foods with due regard to their vitamin content.

In addition to the differences in vitamin values among various natural food materials and their relative distribution in the several parts of such materials, one must consider the possible influence of certain heat and oxidation factors which enter into the manufacture of certain prepared foods. There has perhaps been a tendency to assume that such manufacturing procedures are destructive, although a sweeping generalization is not warranted. As a matter of fact, experience demonstrates that due appreciation of the properties of the several vitamins often leads to manufacturing adjustment resulting in a minimum or no destruction. Direct test of each product and of the special manufacturing conditions involved must, of course, form the basis for final conclusions.

Storage of Vitamins

Whether or not regularity is a feature to be emphasized with regard to the supply of vitamins, and whether an interruption in such supply becomes serious, involves a question as to the extent to which vitamins may be stored in the body. Recent investigations indicate considerable variation in this respect. For example, vitamin A appears to be capable of considerable storage. This point has been stressed by Sherman and Smith,[1] and by Steenbock[2] and his associates. Vitamin B on the other hand is apparently not stored to an appreciable extent. Steenbock and his associates particularly have shown that there is but little storage of Vitamin B.[3] A practical conclusion would be to arrange our diet in such a manner that a regular and uninterrupted supply of vitamin B is furnished.

It is possible in animal studies to determine amount of various food substances required to furnish sufficient vitamin B for growth. There is a temptation to translate such figures into human requirements and to indicate the amount of a given food required to furnish sufficient vitamin B for man. Perhaps it would be well, however, to adopt the more conservative view that this requirement cannot yet be expressed in definite figures; and moreover, there is a sentiment that our food supply should contain more than merely the minimum requirement for growth. Sherman and his associates[4] have indicated "the importance of such selection of food as shall result in an intake of vitamin B much more liberally than the minimum which suffices for the support of growth and the prevention of beri-beri." Evidently a liberal "margin of safety" is desirable.

In a similar vein, McCollum[5] writes: "It should be remembered that there are a thousand gradations between an abundance of a vitamin in the diet and a deficiency which in time results in the appearance of the symptoms which characterize starvation for one of these nutritive essentials. Failure of the appearance of a deficiency disease is not to be taken as evidence that one is receiving the needed amount of the vitamin with which it is associated."

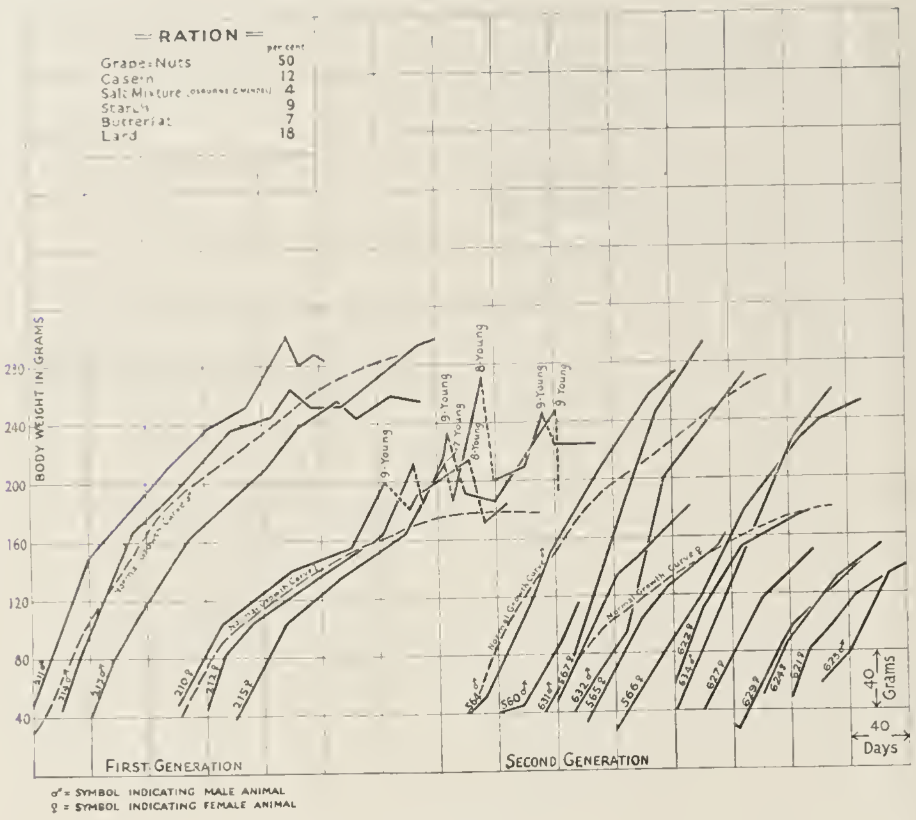


Chart II

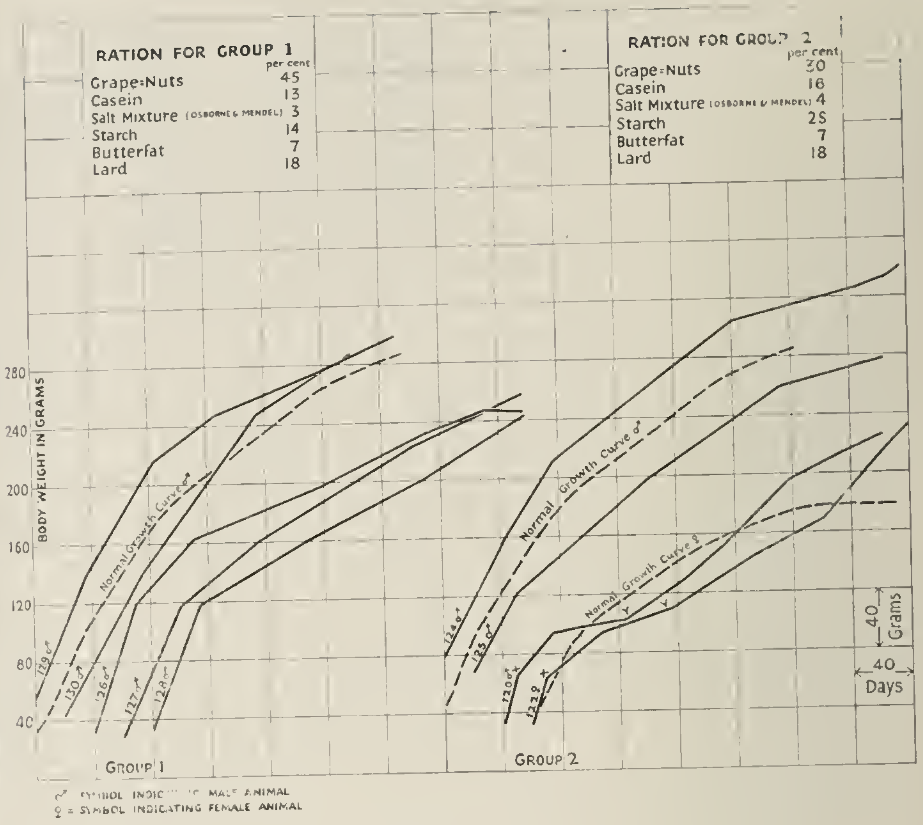


Chart III

In the present presentation we are concerned with the study of the vitamin B potency of two prepared cereal products having a wide distribution.

Cereal Products Studied

One of these is "Grape-Nuts"—wheat and malted barley product—which has been on the market for more than a quarter of a century. The other is "Post's Bran Flakes with other parts of wheat," a product of more recent origin. The latter is composed of the bran coat to which adheres only enough of the endosperm to provide suitable texture and palatability. An effort has been made to determine the relative vitamin B concentrations of these food products as compared with those of other well known foods.

That information of this kind fills a need, is indicated by the views expressed by the committee on nutritional problems of the American Health Association:[6] "In the present state of knowledge we consider it highly important to know as much as possible about the occurrence of vitamins in foods, to take account of them in consideration of food values and the problems of food supply, and to see that individual and family dietaries provide the vitamins in quantities distinctly more liberal than the minimum allowances which would suffice for the prevention of deficiency diseases."

Since vitamins cannot be seen, weighed, or detected by characteristic chemical tests, one must resort to the biological test, animal feeding tests, for their detection.

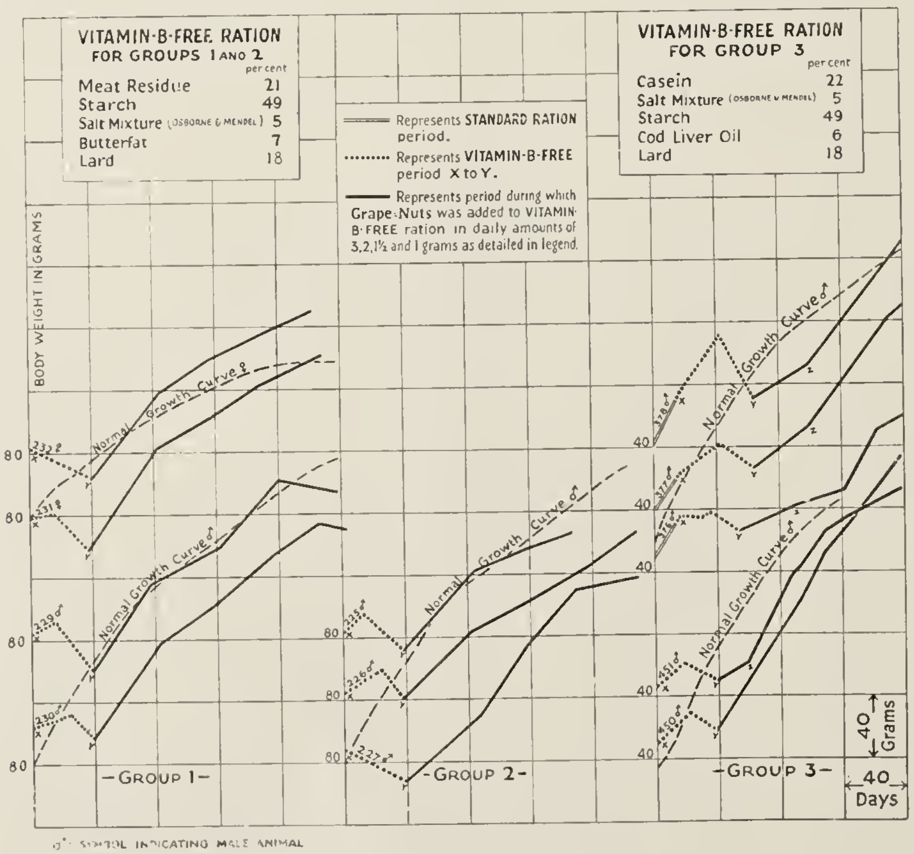


Chart IV

The results of the animal feeding tests conducted in the research laboratory of the Postum Cereal Company are recorded in the accompanying charts. Here are indicated in an approximately quantitative manner, the vitamin B concentrations of "Grape-Nuts" and "Post's Bran Flakes," and also, by way of contrast, the vitamin B content of highly milled grain products. Two types of experiments are recorded: the "preventive" test (Charts 1, 2, 3, and 5); and the "curative" test (charts 4, 6 and 7). Chart 8 contains representatives of both types.

In the "preventive" tests here recorded, groups of animals were fed from the outset upon diets containing respectively 62, 50, 45 and 30 per cent Grape-Nuts, and 45 and 30 per cent of Post's Bran Flakes, as the sole source of vitamin B in each case. The diet in all other respects was adequate. One thus determines the minimum concentration in the diet of the substance necessary to provide a sufficient amount of vitamin B for growth.

The "curative" test is characterized by a preliminary period of three to five weeks during which was fed a diet free from vitamin B but otherwise adequate. At the end of this period there was either failure to grow or severe decline in weight, occasionally accompanied by symptoms of polyneuritis. At this point, the separate groups of such animals were given daily 3, 2, 1.5 and 1 grams of the substance to be tested in addition to the vitamin B free diet. The promptness and extent of resumption of growth gives an indication as to the content of vitamin B in these products.

In the accompanying charts, each division in the vertical direction represents 40 grams, and in the horizontal direction 40 days. The growth record for each group of animals is accompanied by a "normal" curve which represents the growth average of a large number of normal animals. As is customary in such records, female animals are distinguished from male animals by the symbols indicated. The details of the rations are given on the charts. The animals were kept in separate cages having removable screen bottoms. The cages were sterilized twice weekly.

A prime requisite for these experiments is that the substance to be tested shall represent the sole source of

(Continued on page 543)

Principles of Industrial Organization

Effective Organization Increases Efficiency of Wholesale Baking Company

By H. N. STRONK, **Industrial Engineer,**
Arthur Andersen and Company

In the past, the organizations of many large businesses were developed in a haphazard manner without any definite, preconceived plans. Very little conscious use of analysis was employed. The result was the development of accidental organizations which could not take care of sudden booms and slack periods, and in which the loss of one leader often produced disastrous results. Certain definite principles have been developed in organization work and by keeping these in mind, it is possible to design organization plans which are fundamentally correct and then to develop an organization according to these plans. To determine the status of a present organization, it is but necessary to analyze it, compare it with these principles and determine where and to what extent the principles have been neglected. It is possible, by means of analysis of conditions, to design a correct organization plan and develop an organization which is effective and lasting.

The preliminary plans of an industrial enterprise are based on a knowledge of past attainments, that is, on experience. The men who begin a successful undertaking have, in general, a knowledge of what has been done in the field and how it has been done. This knowledge is the basis of the building of a function and the development of the routine for carrying on the work of the function. This is the era of specialization. An industrial enterprise consists of many functions and it is impossible for one man to accumulate, classify and apply all the experiences of every function. This is the strongest argument for the staff type of organization, for the functions are distinctly separated and at the head of each function there is placed an individual, or a staff, whose duty it is to become an expert in this particular function only. An enormous amount of experience is now available in any function and if an individual is made responsible for one function only, he will have time to gather a wealth of experience in this function; and similarly the heads of all other functions. The enterprise as a whole will therefore have at its command a large bulk of accumulated experience on which to base its plans and policies.

After experience has been accumulated, it is next analyzed, a working method particularly applicable to the local conditions of the function evolved, and the method standardized. Carefully drawn plans based on definite standards are one of the greatest waste elimination tools.

The next step consists of the application of this accumulated and standardized experience. During this application, further experience is gathered and changes are apt to be made in the standards as planned. The object is to establish definite standards and then endeavor to improve these standards by observation, assimilation and application of further experience.

An industrial enterprise consists of many funtions, each function being divided into various sub-functions. For example, in the production function we seldom find one individual or group performing all operations which make a complete product. The greater the number of functions and sub-functions, the greater will be the division of responsibility; hence, the next important principle is that of coordination. Coordination is the control of division. The work of each function and sub-function must be so regulated that it will harmonize with the results of the work of the other functions, so that the result will be a smoothly run organization mechanism as a whole.

The growth of a function has now been traced from the accumulation of experience, its standardization and application, and the division and coordination of the work. It is, however, the effort of the human element which carries on the work of the organization and assures that the industrial mechanism is kept in operation. To insure the proper and constant working of the organization, we must have proper conditions under which to carry on the work, reward this effort of the human element, and foster the growth of the efficiency of this effort. This is known as the promotion of personal effectiveness and is perhaps the most vital of all activities which the management should undertake. Nothing will promote personal effectiveness more than will the recognition of the effort of the individual through properly applied and proportioned rewards.

It is a well recognized principle that the highest efficiency is obtained by the separation of planning from performance, that is in the baking industry, technology, method, development and research, from production. Although this line may be drawn sharply, still there must be enough mobility and quickness of action so that emergency cases may be taken care of in the shortest possible time.

One of the greatest emergency problems in an organization is the sudden and unforeseen loss of some valuable plan to provide for understudies in the key positions.

Other points to bear in mind in the design of a plan are:

(a) Subdivide the work in such a manner that no high priced employee performs work which can be done by a lower priced employee.

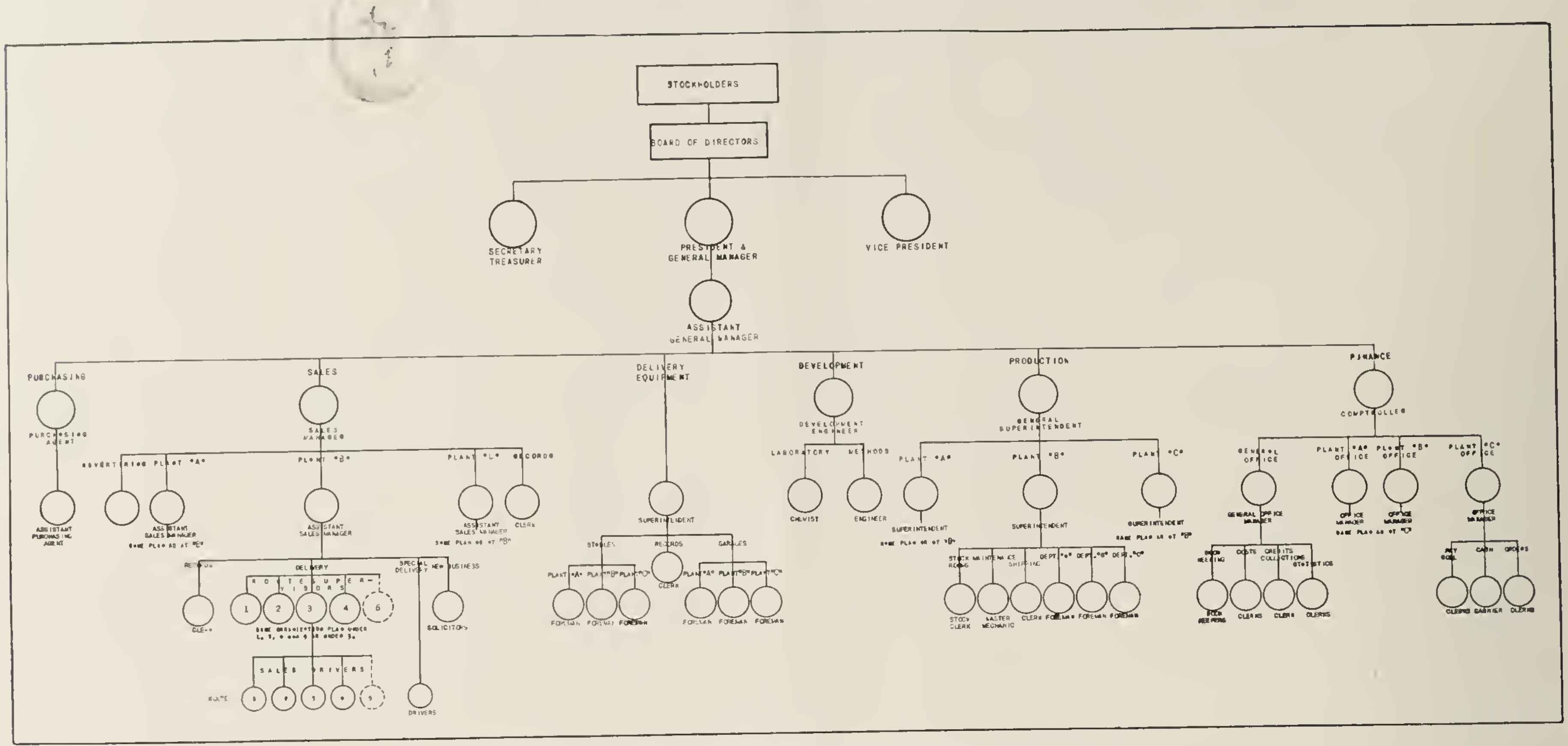
(b) Exceptional cases only should be brought to the attention of the higher officers.

Another valuable principle may be stated as follows: "The authority to issue an order involves the responsibility to see that it is properly executed." Adherence to this principle eliminates that class of managers, unfortunately too common, who like to shift the responsibility for their errors to their subordinates.

The Principles Applied

Application of these principles is illustrated by a general organization plan adaptable to a wholesale baking company operating a number of plants in one large city with all of its distribution within that city and its suburbs.

According to the statistics of the Bureau of the Census, the baking industry in 1919 ranked eighth among all industries in the United States in value of products. The growth of its position is remarkable when one considers that in 1909 it ranked thirteenth and in 1914 it was in the eleventh rank. The rapidity of its growth in recent years as compared with other industries is indicated by an increase of 134 per cent in the value of its products of 1919 over 1914 as compared with an average increase of 95 per cent for all other industries during the same period. Capital invested in the industry increased enormously in 1919 as compared with 1879. During latter years of rapid increases in invested capital and value of products there has been a strong tendency towards the larger type of establishment. This is clearly indicated by the fact that in 1914 the average value of the products per establishment was $19,000 and the average capital invested $10,500, whereas in 1919 these figures were $52,400 and $23,200 respectively. Also the number of small establishments doing an annual business of less than $5,000 decreased



Division of activities in wholesale baking company

from 8,414 in 1914 to 3,450 in 1921. In addition to the rapid transfer of baking from homes to commercial establishments, and from small establishments to large units, there has been a strong tendency in recent years towards the combination of large individual establishments in the same city into one corporate organization and the further centralization, under one corporate structure, of large baking establishments situated in various cities of a wide geographical distribution.

This brief statistical history indicates the development and tendency of the baking industry from the small community shop to large industrial establishments. These large establishments encounter many problems entirely different and in fact sometimes absent, from those in the small shops. One of the most important of these problems is the problem of organization and of organization control.

The elements of subdivision of work, authority and responsibility, the provision for understudies in important positions, and the possibilities of stabilized expansion are shown in the accompanying chart.

In the corporate structure, the stockholders elect a board of directors, and this board appoints the corporate officers of president, vice-president and secretary-treasurer. In this case it is assumed that the president is also the general manager and as such is responsible to the board for all of the affairs of the company. The secretary-treasurer and the vice-president, if active in the company's affairs, usually head one of the operating functions and in this position are responsible to the general manager for the results of their departments. They may be inactive and others, not corporate officials, be in charge of the various departments.

As will be observed, the activities of the company are divided into the following major groups:

Purchasing, in charge of a purchasing agent;

Sales, in charge of a sales manager;

Delivery equipment, in charge of a superintendent;

Development of products and methods, in charge of a development engineer;

Production or manufacturing, in charge of a general superintendent;

Finance and offices, in charge of a comptroller.

The head of each of these groups should be a specialist in his line and because of the logical division of the work it is less difficult to obtain or train such individuals than if it were necessary for them to be thoroughly familiar with all of the activities of the business. The heads of these groups in reality act as an operating staff with the general manager.

The assistant general manager's most important duty is that of coordinating the activities of all of the groups so that all departments work in harmony with each other in the production of tangible results for the benefit of the company as a whole. He relieves the general manager of a great amount of detail, thereby allowing him to devote the major portion of his time to the broader policies and development of the business.

Due to the fact that in the baking industry materials constitute a large percentage of the total cost of the product, it is necessary that the purchasing agent be unusually well qualified in the study of market trends of the most important items and in qualities and blends. An assistant is provided to handle the routine purchasing and clerical work and he should have such latent capabilities as to make him possible for development as chief buyer.

A large percentage of the personnel of the company will be found in the distributing division of the sales department. In this case, distribution is made from different plants. Each plant has its own logical distributing territory and hence is independent of the other plants. Therefore an assistant sales manager is in charge of the distribution from each plant. The sales manager coordinates the activities of all units, outlines and supervises the broad policies of marketing and market development, and determines the effectiveness of performance. The delivery system at each plant can be readily expanded by the addition of route supervisors and additional routes, as is indicated by the dotted circles. The assistant sales managers naturally act as understudies to the sales manager, the route supervisors to the assistant sales managers, and the sales-drivers to the route supervisors.

Delivery equipment plays an important part in the business of a wholesale bakery because of its prime cost, expense of operation, and necessity of reliable and continuous performance. Hence it is of value to separate this equipment function from other activities and definitely establish authority and responsibility for its performance. Many savings have been made by the intensive study of the deliver equipment situation.

The application of a development staff is somewhat new in this field. Some of the larger establishments have chemical laboratories for the analysis of materials and the results of processes, but few have taken advantage of the expense saving possibilities of the application of intensive research in the control of materials and processes and the study of production methods. In the case illustrated, this development staff is not only responsible for the technological and analysis

(Continued on page 544)

THE CONFERENCE TABLE

The Nation's Food and the Law Makers

By GERTRUDE SEYMOUR

IN national affairs, no small part is played by lobster salad, rare tenderloin, and demi tasse. Would you prove it, go into the Capitol lunch room on any noontide hour of a congressional session and hear the waiter call his order down the shaft, adding as a sort of murmured footnote, "Uxtruh. Senator." Extra good food; extra good work—a fine theory. (Well, of course; but on the whole . . . yes? And perhaps the steak was overdone that day.)

And it is a theory which is working out all over the country. Perhaps nothing since the day when bacteriology ordered a right-about-face from cure to prevention, has any more radical step been taken than this emphasis on the significance of our supposedly ordinary routine of three meals a day. Of it the annals are neither short nor simple; yet something of its tragedy, its exciting and splendid possibilities, even the layman may read as he runs. For instance—

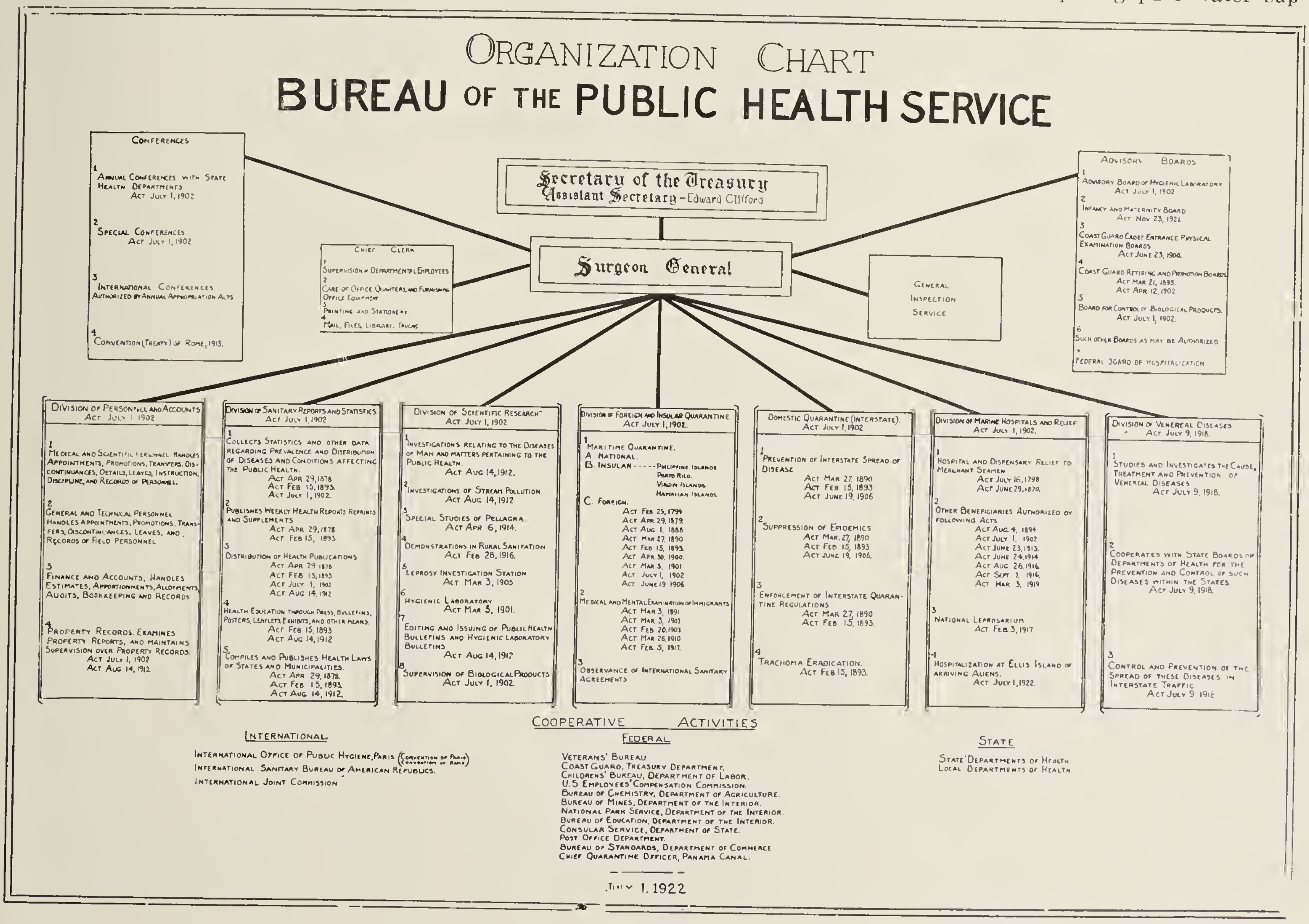
Food and Laws

There are only two federal laws explicitly concerned with food. One is the meat inspection law. This law, administered especially by the bureau of animal industry, in the Department of Agriculture, applies only to articles in interstate commerce, or when meat is shipped from one state into another. So that by far the larger proportion of control of conditions of meat is the business of the individual state. Responsibility for these conditions is on the department of health in several states, and inspections of sanitary surroundings in markets is a rather new profession rapidly being entered by keen-eyed and practical minded women.

The second federal law concerned with food is the Pure Food law, administered by the bureau of chemistry, Department of Agriculture, and covering various highly technical points interpreted as "adulteration."

To the states also are left the quality and condition of milk, except when the hygienic laboratory of the United States Public Health Service has been appealed to for aid in scientific investigation, or administrative officers of the service have responded to call for practical surveys of milk supplies in cities, or installed pasteurization plants. There is consequently a wide variation in standards—five different standards of fat content being legally required in as many different parts of the country, and eleven standards of total solids. On on these lists, Idaho stands lowest, requireing but 3 per cent fat and 11 per cent total solids; Massachusetts ranks highest with 3.55 per cent fat and 12.15 per cent total solids required. Such attempted control of standards as has yet been attained is exercised by a volunteer organization, the Association of Medical Milk Commissions.

Perhaps water is hardly a food, strictly speaking, yet it is closely enough related to be mentioned here in passing. For here again there is no federal law requiring pure water sup-


ORGANIZATION CHART
BUREAU OF THE PUBLIC HEALTH SERVICE
Secretary of the Treasury
Assistant Secretary—Edward Clifford
Surgeon General
Conferences
1 Annual Conferences with State Health Departments Act July 1, 1902
2 Special Conferences Act July 1, 1902
3 International Conferences Authorized by Annual Appropriation Acts
4 Convention (Treaty) of Rome, 1913.
Chief Clerk
1 Supervision of Departmental Employees
2 Care of Office Quarters, and Furnishing Office Equipment
3 Printing and Stationery
4 Mail, Files, Library, Trucks
General Inspection Service
Advisory Boards
1 Advisory Board of Hygienic Laboratory Act July 1, 1902
2 Infancy and Maternity Board Act Nov 23, 1921.
3 Coast Guard Cadet Entrance Physical Examination Boards Act June 23, 1906.
4 Coast Guard Retiring and Promotion Boards. Act Mar 21, 1895. Act Apr 12, 1902
5 Board for Control of Biological Products. Act July 1, 1902.
6 Such other Boards as may be Authorized.
7 Federal Board of Hospitalization
Division of Personnel and Accounts Act July 1 1902
1 Medical and Scientific Personnel Handles Appointments, Promotions, Transfers, Discontinuances, Details, Leaves, Instruction, Discipline, and Records of Personnel.
2 General and Technical Personnel Handles Appointments, Promotions, Transfers, Discontinuances, Leaves, and Records of Field Personnel
3 Finance and Accounts, Handles Estimates, Apportionments, Allotments, Audits, Bookkeeping and Records
4 Property Records. Examines Property Reports, and maintains Supervision over Property Records. Act July 1, 1902 Act Aug 14, 1912
Division of Sanitary Reports and Statistics Act July 1, 1902
1 Collects Statistics and other data regarding Prevalence and Distribution of Diseases and Conditions affecting the Public Health. Act Apr 29, 1878 Act Feb 15, 1893. Act July 1, 1902.
2 Publishes Weekly Health Reports Reprints and Supplements Act Apr 29, 1878 Act Feb 15, 1893
3 Distribution of Health Publications Act Apr 29 1878 Act Feb 15, 1893 Act July 1, 1902 Act Aug 14, 1912
4 Health Education through Press, Bulletins, Posters, Leaflets, Exhibits, and other means. Act Feb 15, 1893 Act Aug 14, 1912
5 Compiles and Publishes Health Laws of States and Municipalities. Act Apr 29, 1878. Act Feb 15, 1893. Act Aug 14, 1912.
Division of Scientific Research Act July 1, 1902
1 Investigations relating to the Diseases of Man and matters pertaining to the Public Health. Act Aug 14, 1912.
2 Investigations of Stream Pollution Act Aug 14, 1912
3 Special Studies of Pellagra Act Apr 6, 1914.
4 Demonstrations in Rural Sanitation Act Feb 28, 1916.
5 Leprosy Investigation Station Act Mar 3, 1905
6 Hygienic Laboratory Act Mar 3, 1901.
7 Editing and Issuing of Public Health Bulletins and Hygienic Laboratory Bulletins Act Aug 14, 1912
8 Supervision of Biological Products Act July 1, 1902.
Division of Foreign and Insular Quarantine Act July 1, 1902.
1 Maritime Quarantine.
A National.
B. Insular - - - - - Philippine Islands Porto Rico. Virgin Islands Hawaiian Islands.
C. Foreign. Act Feb 25, 1799 Act Apr 29, 1879. Act Aug 1, 1888 Act Mar 27, 1890 Act Feb 15, 1893 Act Apr 30, 1900. Act Mar 3, 1901 Act July 1, 1902 Act June 19 1906
2 Medical and Mental Examination of Immigrants Act Mar 3, 1891 Act Mar 3, 1903 Act Feb 20, 1907 Act Mar 26, 1910 Act Feb 5, 1917.
3 Observance of International Sanitary Agreements
Domestic Quarantine (Interstate). Act July 1, 1902
1 Prevention of Interstate Spread of Disease Act Mar 27, 1890 Act Feb 15, 1893 Act June 19, 1906
2 Suppression of Epidemics Act Mar. 27, 1890 Act Feb 15, 1893 Act June 19, 1906.
3 Enforcement of Interstate Quarantine Regulations Act Mar 27, 1890 Act Feb 15, 1893.
4 Trachoma Eradication. Act Feb 15, 1893.
Division of Marine Hospitals and Relief Act July 1, 1902.
1 Hospital and Dispensary Relief to Merchant Seamen Act July 16, 1798 Act June 29, 1870.
2 Other Beneficiaries Authorized by following Acts Act Aug 4, 1894 Act July 1, 1902 Act June 23, 1913. Act June 24, 1914 Act Aug 26, 1916 Act Sept 7, 1916, Act Mar 3, 1919
3 National Leprosarium Act Feb 3, 1917
4 Hospitalization at Ellis Island of arriving Aliens. Act July 1, 1922.
Division of Venereal Diseases Act July 9, 1918.
1 Studies and Investigates the Cause, Treatment and Prevention of Venereal Diseases Act July 9, 1918.
2 Cooperates with State Boards or Departments of Health for the Prevention and Control of such Diseases within the States. Act July 9, 1918.
3 Control and Prevention of the Spread of these Diseases in Interstate Traffic Act July 9 1918
Cooperative Activities
International
International Office of Public Hygiene, Paris (Convention of Paris) (Convention of Rome)
International Sanitary Bureau of American Republics.
International Joint Commission
Federal
Veterans' Bureau
Coast Guard, Treasury Department.
Childrens' Bureau, Department of Labor.
U.S Employees' Compensation Commission.
Bureau of Chemistry, Department of Agriculture.
Bureau of Mines, Department of the Interior.
National Park Service, Department of the Interior.
Bureau of Education, Department of the Interior.
Consular Service, Department of State.
Post Office Department.
Bureau of Standards, Department of Commerce
Chief Quarantine Officer, Panama Canal.
State
State Departments of Health
Local Departments of Health
July 1, 1922

ply. The states again carry the responsibility, though Congress requires the Public Health Service to examine and certify water supplies used in interstate traffic, and in national parks, or on the lake steamers. The water in coolers on through trains, or on these steamers, is under the eye of the Government—literally, and that eye is aided by a microscope. Placards over taps or coolers in stations call attention to the fact that the supply from which this water is taken is condemned; and water should not be used until the improvements ordered have been made and the placard is removed.

Yet this is a very difficult matter for any one state or city to administer. Count the number of towns on any large river, especially in manufacturing areas. Consider that these rivers are not only the main source of drinking water, unless the place is fortunately situated among or near hills and can depend on its own streams, but also they are the ultimate receptacle for factory wastes, and drainage systems. Ice is still cut from areas used as bathing in spite of the rapid increase in manufactured ice. And if none of these conditions prevail at any one place, they probably, indeed, usually do a short distance up-stream. And if that place is over the state line, your most devoted city or state authorities can depend only on cooperation for a remedy. It must be added that this usually suffices—in time. But a federal law would obviously be of prompt value.

Food and Disease

Food and disease, food and health, are the two main lines of research of the United States Public Health Service in this special field. The briefest outline of this first question, how food may cause and may cure sickness, takes one far away from that familiar gesture with which doctor and nurse wave away from the sickbed, all one's favorites on the menu. It transplants one to Southern villages in the areas of textile mills, where during more than six years of experiment, watching, waiting, and all over again, a most dramatic story was worked out. The subject was pellagra. Now pellagra is one of the diseases that seem suddenly to be here where they were not before. It is very common in Italy, Roumania, Spain, Asia Minor, Austria, Bulgaria, and even occasionally seen in Egypt, India, South America, and Africa. Perhaps one might say, Ellis Island, attention! But that is a bit off the trail.

Reported in Massachusetts and New York only once or twice in half a century, suddenly it was recognized as a menace in southern states, as far south as Mexico, as far north as Illinois. And the question was: What is this thing? What causes it? How cure, and how prevent it? To which the service worked out the reply that pellagra was not caused by a germ, not directly by insanitary conditions, but quite definitely by the lack of certain elements in food, by an ill-balanced diet.

Then came tests for the theory: if wrong food was really the cause of pellagra, right food should cure it. And it did. In orphan asylums and other institutions an improved diet wrought remarkable results. In some cases just the addition of certain articles to the regular menu was sufficient either to cure or to prevent a recurrence. New patients entering one of the service pellagra hospitals were given a special diet of milk, soft eggs, cereals, etc., from which usually within three days they were transferred to the standard diet regular for all patients, of corn bread, fresh meats, vegetables, fruit, etc. Dispensary patients were required to report at noon, when they were given this standard meal. This was absolutely the only change in the routine of their lives and habits. Yet whether from distant places or from the nearby mill communities patients under this treatment improved promptly and straight along the line. And they remained well as long as the one right meal was obtainable.

A further test: If wrong food caused pellagra in actual existence, it must cause it under artificial conditions. Volunteers from the prison farm accepted the test and were promised liberty for doing so. (Remember the men who volunteered to test out the yellow fever theory in Panama and tick fever in the Rockies?) Understanding exactly what the test implied, of temporary discomfort under a wrong diet, accepting the faith of the physicians that this discomfort would be relieved as soon as it had been demonstrated, the prisoners began to eat the suspected diet—and symptoms of pellagra appeared. Corrective diet dispelled the symptoms, justified their faith, and won their liberty.

But a harder test is the prevention of such a disease. Side by side with the clinical work just summarized, social and economic studies continued of families in certain cotton mill villages to observe the various factors that might influence the spread of pellagra. And there is the bedrock difficulty. Let the mills close down, and the household food supply registers the change. Seasons bring other changes; not all desirable foods are available at all seasons, whether one has money to buy them or not. And deeper still, there is the lack of knowledge of how to use to advantage what is obtainable, of what is food, what is nutrition. So permanent factors in the situation remain in very large degree—economic dependence, ignorance or unaccustomedness. The study was continued another year after these conclusions were reached; for it was the beginning of the economic depression of 1920-1. And as foreseen and feared, the incidence of pellagra rose, even to 150 per cent above the rate of the years preceding. Wanted: further application of the known remedy. This is an appeal to teachers and citizens in the affected areas.

Space forbids the story of the joint attack by laboratories of nation and of states, by doctors and nurses and teachers on the various "food poisons" that stalk the unwary. Things that will upset anyone, speaking euphemistically, like certain mushrooms; perfectly good things that some people cannot endure; the accidents in manufacture or preparation—the list is a chamber of horrors that takes away one's appetite until one recalls that these are but wax figures, on the whole.

The prevention of such ills has a recognized place in the public health program of the country as well as in its so-called commercial development. And the final safeguard is combined sense and information. Technically that works out in a careful tracing of every outbreak to its source. Several people suffering for a few hours after eating certain articles may feel repaid for their discomfort in the knowledge that they have set in motion machinery to stop that particular injury to the common welfare. It is the same process exactly as that dealing with cholera or plague on the international scale; or tracing typhoid to the faulty well or unsuspecting "carrier." Find the source, and amend that, is the modern "epidemiology."

Food and Health

Fortunately pellagra and scurvy and beri beri and the rest are for most people only strange names of unpleasant mysteries. But 35 per cent at least of the population of this country face the hazardous occupation of growing up, or the difficult matter of helping somebody or several somebodies to grow up. Out of the many lines of investigation in questions of this growing up process developed by the service, only one can be noted here. It is perhaps the most important one; for if nutrition is assured, minor physical defects will be the more readily corrected, and a brighter future assured for the miniature citizen.

To years ago, in Boston, in cooperation with the city Health Department, the Baby Hygiene Association the Research Laboratory of the Massachusetts General Hospital, and other societies, the child hygiene section of the service worked out an important demonstration of the value of dried milk or milk powder as food for babies. It had been used for older children, and for adult people. Its value for infants was accepted as the result of this investigation.

Among the surveys, in schools and out, of next older children, the prevalence of malnutrition is an astonishing fact. From three groups of children numbering first 500, then 9,973, then 14,355, in at least six different states, high percentages of underweight were found. In schools of one county, 36.9 per cent of the children were below par

(Continued on page 542)

Selecting Food With the Eye

Red Apples and Pink Lemonade Appeal to Purchasers

By E. H. S. BAILEY

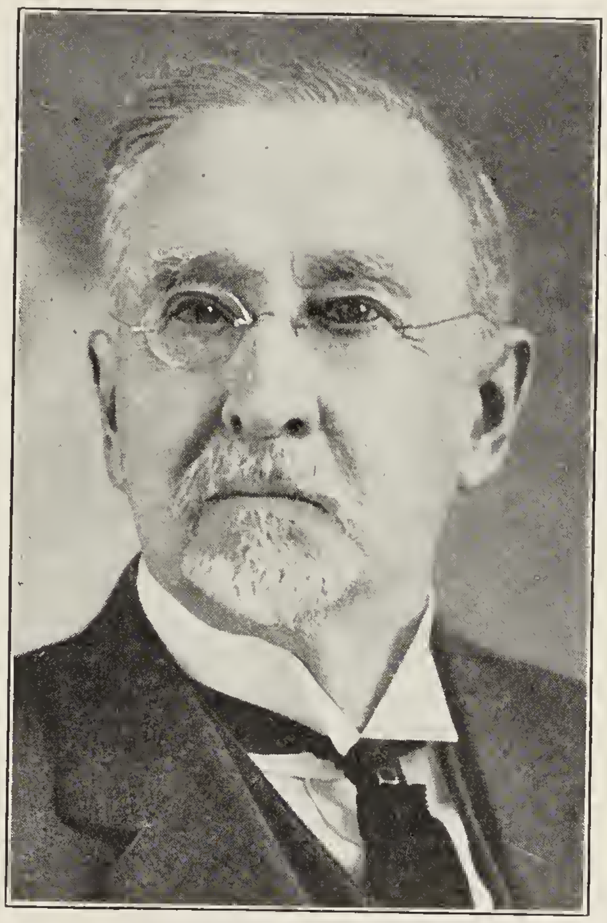
While the flavor of a food has much to do with our choice, the appearance has much more to do with the casual selection than we may be inclined at first to admit. The grocer buys his teas by their flavor, and the wine tester is an expert on the "bouquet" or the delicious fragrance and taste of the products of the vineyard, and there are still some people who actually go out of their way to taste or smell the foods which they are selecting. The farmer, when he goes to the general store, feels that he has a right to taste a thin "sliver" of the cheese that he is buying, and some housewives may select their butter by odor and taste; but in this country at least, there are few purchasers of food who claim any such privileges.

In the good old days when the purchaser was expected to visit the market and select the food for the family, instead of getting it "over the wire" to be smuggled later into the basement by an irresponsible delivery boy; in those far away days, the market was ransacked to obtain vegetables, fruits and dairy products that were fresh and appetizing in appearance, that appealed to the eye as well as the purse. After all, as Professor Milling has observed, we "eat with our eyes" more than we may admit. It is only those who are especially critical about their food who select by odor, or exclusively by the flavor.

It is the highly polished red apple that is the "best seller" at the corner fruit stand even if it be wholly devoid of flavor and utterly insipid. Any horticulturist will tell you that the red apples are the ones to raise for profit, although he admits he does not use them himself. Some have gone so far as to say that two kinds of fruit grow on apple trees, viz., apples and Ben Davis; but the highly colored fruit, suggestive of the mellow sunshine and balmy autumn breezes still remains in favor.

In oranges the "yellows" from California, even if they are sometimes acid to the taste, sell better than those from other sections that are not so highly colored. Does it improve the eating quality of pecans to polish them and give them a crimson tint with coal tar color? While you will acknowledge that the flavor is not improved you will still pay a little more for the polished nuts. The appeal to the eye overcomes the better judgment.

Why do we demand the big translucent grains of polished rice? The best part of the grain in the process of preparing for the market has been rubbed off and is used only as a stock food under the name of "rice polish," while the human digestive system has to be content with the starchy grain that is left, simply, forsooth, because the polished rice "looks finer" and is a better seller. It matters not that the all important "vitamins" have been removed, to such an extent that the people of whole sections have suffered from malnutrition largely from the use of polished rice. It "looks better" than the rough rice. The eyes dominate the judgment.



E. H. S. Bailey

There may be a difference of opinion as to why coffees are glazed, the roaster claiming that the oils and flavors are the better retained after a process of glazing, but it is still true that not unfrequently low grades of inferior coffee are glazed simply to improve their appearance, so the glazing gives an opportunity at least for fraud.

It is but natural to associate the yellow of the daisy heart and of the meadow cowslip with the high grades of "June" butter, but is that any reason why the pale, flavor lacking butter produced on winter fodder should be colored with annatto or with a coal tar dye to imitate the June product? Yes, there is a reason. It is an unfair appeal to the eye to boost the quality by reckoning on our experience; as to how the grass fed product should look. Yellow butter is usually good; this butter is yellow; therefore it is good.

The thirty-year-old wrangle as to the use and abuse of oleomargarine is intimately connected with this tendency. Oleo may be wholesome, it is cheaper than butter, but forsooth, if manufacturers are allowed to color it—as it is admitted winter butter may be colored—there would be danger that oleo would be substituted for butter. In fact, an appeal to the color sense has been carried so far that it was seriously proposed in some sections, in order to discourage the use of oleo, to require all oleo to be colored pink. We might ultimately train ourselves no doubt, to select oleo for its pinkness, or milk for its blueness, if these colors were declared to be indicative of fine qualities.

That color has much to do with price is also shown when we are told that brown eggs are more salable in Boston, and white ones in California. Are Maraschino cherries any better because they are dyed red, pink, or green? They sell better. Even the pink circus lemonade and the yellow orangeade attract the tired dusty crowd more than would pale non-decorated beverages.

In making a summary of the qualities of foods that attract, it is evident then that the list is not complete, unless to form, size, flavor, taste, and odor, be added, brilliant or even barbaric coloring.

An Interesting Conference

The AMERICAN FOOD JOURNAL has received an invitation to attend the first national conference of officials and executives of the fifty-seven national trade associations of the food industry to be held at the Waldorf Astoria, New York City, November 26. This invitation has been issued and the conference arranged by the Food Products Institute of America.

The program includes a preliminary conference and luncheon, followed by the main conference at which Frank L. Cheek of the Cheek-Neal Coffee Company will preside. The speakers at this meeting will be: William Lybrand, of Lybrand Ross Brothers and Montgomery, accountants of New York City, who will speak on the subject, "How to Secure Coordinated Effort in the Food Industry." Oscar, the distinguished chef of the Waldorf, will discuss "The Importance of Discrimination in the Choice of Foods." Bruce Barton, of Barton, Durstine, and Osborne, New York City, will discuss, "How to Get Maximum Results from Trade Association Membership." Open discussion of the addresses will follow. Such economic problems as these associations may have in common will be presented in an effort to discover ways and means for more definite cooperation.

CONVENTION NEWS

Varied Food Interests Represented in Conventions

Chain Store Grocers Meet

At the third annual convention of the National Chain Store Grocers' Association held in New York City, September 20-21, the secretary reported a membership of fifty-seven responsible organizations, this membership being represented in twenty states, the District of Columbia and thirty-four cities.

The officers elected at this convention are as follows:

President—E. G. Yonker (Sanitary Grocery Company), Washington, D. C.

First Vice-President—James Reeves (Daniel Reeves, Inc.), New York, N. Y.

Second Vice-President—J. M. Fly ("Mr. Bowers'" Stores, Inc.), Memphis, Tenn.

Third Vice-President—Fred W. Albrecht (F. W. Albrecht Grocery Company), Akron, Ohio.

Secretary - Treasurer — Alfred H. Beckmann, New York, N. Y.

Executive Committee—W. G. Wrightson (the Great Atlantic and Pacific Tea Company), Jersey City, N. J.; Henry C. Bohack (H. C. Bohack Company, Inc.), Brooklyn; D. Pender (D. Pender Grocery Company), Norfolk, Va.; S. B. Charters (S. B. Charters Grocery Company), Pittsburgh, Pa.; C. V. Cox (Cox's Cash Stores), Little Rock, Ark.; M. B. Skaggs (Skaggs-United Stores), Portland, Oregon; Sam Seelig (Sam Seelig Company), Los Angeles, Cal.; E. E. Gray (E. E. Gray Company), Boston, Mass.; C. E. Marr (the Marr Stores), Spokane, Wash., and James W. Crook (J. W. Crook Stores Company), Baltimore, Md.

Coffee Roasters Meet in Boston

An interesting and worthwhile program was presented at the thirteenth annual convention of the National Coffee Roasters' Association, which was held at the Copley-Plaza Hotel, in Boston, October 15, 16, 17, 18. One of the outstanding subjects discussed was "Cost Accounting," presented by T. M. Harrison of the Stevenson Corporation who have installed the uniform cost accounting system in the plants of a number of members.

The following addresses were included in the program: "Economies in Transportation and Distribution," Irving S. Paull, United States Department of Commerce; "Legislation," Dana T. Ackerly, Breed, Abbott, and Morgan; "Simplification in the Coffee Business," A. E. Foote, United States Department of Commerce. The final report of the four-year investigation of coffee was given by Professor Samuel C. Prescott of the Massachusetts Institute of Technology, in the form of a summary of the results of the investigation which had been conducted in the laboratories of the Institute.

Hospital Dietetic Council Holds Conference

The first annual conference of the Hospital Dietetic Council was held in Milwaukee, October 29-November 2. Officers of the council are: president, Rena S. Eckman, Michael Reese Hospital, Chicago; first vice-president, Bertha Wood, East Northfield, Massachusetts; second vice-president, Mary Foley, Mayo Clinic, Rochester, Minnesota; executive secretary, Mrs. John Henry Martin, Charles T. Miller Hospital, St. Paul; treasurer, Margaret Fotheringham, Allegheny General Hospital, Pittsburgh.

The following subjects were presented in the program: "How the Hospital Dietitian May Have Contact with Administrative Problems," "The Relation of the Dietitian to a Community Hospital," "Instruction of the Diabetic Patient," "The Dietitian and Public Welfare," "The Contribution Which the Hospital Through Its Department of Dietetics May Make to the Community," "Some Possibilities of Unusual Meats on the Institutional Menu," "A Consideration of Diets for Patients Receiving Insulin," "Adapting Diets to Individuals," "Need for Diet Control Accompanying Insulin Administration," "Infant Feeding."

Box Manufacturers Convene

The National Association of Box Manufacturers held its twenty-fourth semi-annual convention in joint session with the Eastern Shook and Wooden Box Manufacturers' Association, at the Waldorf Astoria in New York City, October 18-19. The joint meeting of these two organizations held two years ago was such a success that it was decided to repeat the plan. An unusual feature of the program was that there were no outside speakers and the entire session was devoted to a discussion of the problems of the industry.

Members received a good understanding of conditions over the country from the reports of the board of governors, each member reporting on conditions in his particular territory. Important matters presented to the convention were: the future advertising plans presented by C. V. Hodges, the advertising manager; the plan for a cost accounting system to be installed in individual plants; the consideration of grading rules and standardization of box styles; the differential price list; and the adoption of a code of ethics.

Canners Hold Important Meeting

Two meetings of great importance to canners were held in Chicago the week of November 5. At this time the board of directors of the National Canners' Association was meeting at the LaSalle Hotel, and two days later the Western Canners convened at the Hotel Sherman. Among the speakers on the program of this latter convention were: J. W. Herscher, president National Wholesale Grocers' Association; George W. Cobb, American Can Company; Frank C. Englehart, Canning Machinery Supplies Association; J. J. Rogers, Western Canners' Association; J. H. McLaurin, president American Wholesale Grocers' Association; John C. Sheehan, National Association of Retail Grocers; W. W. Wilder, National Kraut Canners' Association; and W. D. Bigelow, director of research laboratories of the National Canners' Association.

FOOD TECHNOLOGY

Scientific Information on Food Subjects With Practical Application

Adviser. Dr. W. W. Skinner. Bureau of Chemistry, U. S. Dept. of Agriculture.

The Formation of Maltose in Sweet Potatoes on Cooking

By H. C. GORE,
Bureau of Chemistry, United States Department of Agriculture

UNTIL very recently W. E. Stone[1] was the only chemist who had reported on the changes in composition of sweet potatoes which occur during cooking. He showed that dextrin was formed, and that while it was possible to isolate sucrose from raw sweet potatoes by allowing it to crystallize from the alcohol extract, sucrose could not be thus prepared from baked sweet potatoes.

It has been shown by the writer[2],[3] that sweet potatoes are rich in diastase and that upon slowly cooking Porto Rico potatoes nearly all of the starch changes into dextrin and maltose. Magoon and Culpepper[4] found that similar changes occur in sweet potatoes during canning.

The work described below shows that maltose, the sugar always formed in the saccharification of starch by diastase, forms in large quantity during cooking. The increases in sugars calculated as maltose, determined by copper reduction, agree substantially with the increases in sugar determined by polarization when similarly calculated. Moreover it is possible to isolate crysalline maltose in quantity from the alcohol extract of cooked sweet potatoes. The saccharification is shown not to occur at the boiling point. The evidence that the formation of the maltose in the sweet potato is due to diastase is thus fairly conclusive. It is shown also that sugar formation in the initial stages of the action of the diastase on the starch of sweet potato tissue, while not instantaneous, is extremely rapid, e. g., slices of sweet potato dropped one by one into boiling water developed about 7 per cent of sugar calculated as maltose during the brief period when they were passing through the range at which diastase is active, this phenomenon indicating the close association of diastase with starch in the cell of the sweet potato.

The above facts have many practical bearings. So far as is now known, they are unique and peculiar to the sweet potato. It is evident that the formation of maltose is of paramount importance in the production of delicious cooked sweet potatoes as we know them. The extremely rapid action of the diastase explains how it is that sweet potatoes develop a fair amount of maltose even in the tissues near the outer surfaces when quickly heated in steam or in rapidly boiling water. Differences in diastatic power between different varieties of sweet potatoes, and between sweet potatoes grown under different cultural conditions or kept under different conditions of storage may be related to such factors as table or canning quality and thus serve as a guide in the further development of sweet potatoes from the horticultural standpoint. It is likely too that the information will be of value as a guide in working out the best methods of cooked or canning sweet potatoes especially when the highest practicable content of sugar is desired in the finished product. Again, it is known that as a consequence of the autolysis, sweet potatoes require far less malt in preparing them for sirup making, or for fermenting and distilling than other like materials. This fact will cheapen methods of utilizing sweet potatoes industrially as sources of sirup, alcohol, vinegar, or other products requiring the digestion of the starch through the use of malt. Thus in sirup making[5] a trifling amount of barley malt only, from 1/5 to 1/10 of one per cent of the weight of the potatoes, is required.

Since upon cooking sweet potatoes at least half, and frequently nearly all, of the starch present becomes converted into sugar, our concept of the sweet potato as a starchy food should be revised since where consumed by man it really is saccharine rather than starchy.

It is possible too that, like barley, the sweet potato may become an important industrial source of diastase. It has already been shown[6] that raw sweet potato tissue retains its diastase during drying, and that the meal or flour produced by grinding has a diastatic power at least twice that of barley malt. In the sweet potato the diastase occurs ready formed, and does not have to be developed by the malting process.

Experimental Part

A satisfactory heat treatment for potatoes in the production of sweet potato sirup consists of cooking in live steam at atmospheric pressure for an hour and a half, allowing the condensate to run to waste during at least the first hour. In the experiment described below Southern Queen sweet potatoes, grown and stored at the Arlington Experimental Farm[7] were used. They were washed, trimmed by cutting away all dried tissne resulting from healed bruises and withered ends of roots, and sampled by cutting sections from a number of potatoes taken at random. The sample of raw potato was ground by forcing through the die of a special sampling press of Austrian make known as a "Herles" press.[8] The weight of trimmed potatoes was 18.0 k. They were placed in a 25 gallon steam jacketed copper kettle and cooked for an hour and a half in a current of live steam delivered from a pipe which passed through a slot in the cover of the kettle and terminated near the bottom. During the cooking the condensed water flowed away continuously through an opening in the bottom of the kettle. After cooking the weight was 17.8 k. The potatoes were reduced to a pulp by stirring and a sample taken for analysis.

The methods of analysis of the Association of Official Agricultural Chemists were used. Solids were determined by drying in vacuum at 70 deg. C. to constant weight. In determining carbohydrates samples of 26 g. were taken. Each sample was washed into a beaker with 95 per cent alcohol and heated to boiling. It was then thrown on a suction filter, the pulp on the filter washed with alcohol and returned to the beaker. Here is was heated with a fresh portion of alcohol and the extraction process repeated several times. The extracts were combined, a little calcium carbonate added and evaporated on the steam bath to a thin sirup. This was made up nearly to 100 cc. with water, a little lead acetate solution added and the volume completed to 100 cc. After filtering, the excess of lead was removed by dry potassium oxalate. Reducing sugar before and after inversion with hydrochloric

(Continued on page 537)

EDITORIAL

The Philosophy of Food Laws

"UNLESS high minded food men continue to band together for the maintenance of good food laws, keeping within their own hands the standard setting that is to determine whether the country shall be well fed or no, the ethics of the meanest will prevail."

Thus Dr. W. W. Skinner of the Bureau of Chemistry in a recent interview with one of the editors of THE AMERICAN FOOD JOURNAL.

As Dr. Skinner pointed out, once let the good man relax his hold and an inferior product is foisted upon the market, crowding out the one of standard and tested worth.

It is not enough to keep one's own banner unsullied, one's own product up to grade; one must see to it that he lends the weight of personal influence in the markets of the world where food products are bought and sold.

Fully realizing the necessity for this the manufacturer will form a new conception of the food control man; this man will never again be classed, to quote Dr. Skinner, "as a policeman with a stick." He will stand out as one who is serving the best interests of all concerned, those of the manufacturer as well as of the consumer.

It is worth while to reflect on just what is implied by all this.

Beginning with the thesis that a manufacturer can perform no greater material service to the nation than by helping to maintain high standards, suppose we pause for a bit of analysis.

We receive at Ellis Island citizen material not always, apparently, of the finest calibre. The individuals composing the motley throng have come, many of them, from war stricken countries; their nutrition is often faulty, their viewpoint may be distorted. We assimilate this material, welding it in our great national furnace, and within one short year make of it satisfactory and worth while citizens. Not digging down into the ethical or spiritual values represented, not to be too exacting as to language attainments, we have yet made citizens who go out into our marts of trade and do their part in oiling the machinery that enables these marts to operate and to attract to themselves the trade of other lands.

How do we do it?

Largely by feeding these men and women the food that their undernourished bodies require.

No nation ever waxed great on a diet of black bread and watery soup. Historians tell us that most of the cases of national decadence may be traced to faulty or insufficient diet.

So the food manufacturer who keeps standards high, who makes it possible for the toilers to obtain proper nourishment is, of course, performing a service of immeasurable spiritual value, and he is at the same time putting money into his own pocket.

Giving a Thought to the Problems of the Wholesale Grocer

WITH all the world and his wife sympathizing with the farmer, says O. J. Moore, in "The Wholesale Grocer" for October, 1923, it may be in order to remind the food division of this world that the wholesale grocer is in very much the same predicament as the farmer.

THE AMERICAN FOOD JOURNAL occupies the enviable position of numbering among its friends, representatives of most of the chief food groups. We see the difficulties of both sides of many questions that are in danger of splitting the field up into factions. Already on record as a friend of the manufacturer, with every nerve keyed to serve him to our utmost, we are, in all friendliness of spirit asking him to give a thought to the possible help that he has it in his power to render the wholesale grocer.

Conditions are at present against the wholesale grocer. Transportation, labor, machinery, all these and more are spoken of by Mr. Moore as presenting obstacles well nigh insuperable to the profitable administration of business in the wholesale grocery field. Costs are mounting, profits declining, and the end is not yet.

What is the remedy?

According to Mr. Moore it rests with the manufacturer. He asks of the manufacturer two things, first, necessary increase in the gross percentage of profit. Second, the protection that price maintenance will afford.

THE AMERICAN FOOD JOURNAL offers its columns for a free discussion of the feasibility of such a program.

Food and the Nations Capital

EUROPEANS are wont to comment on the American's fondness for superlatives as a test of values. We boast, say our trans-Atlantic brothers, of having "the tallest buildings," the "largest business," etc.

National weakness this may be, but it is nevertheless a practical help to envisage occasionally the actual bulk of the country's business, and to relate our own particular occupation to the whole.

In a recent address Dr. W. W. Skinner pointed out that the statistics of 1921 show the figures representing the food business to be $14,000,000,000.

Truly a tidy sum!

When one reflects that even the railroads were responsible for the handling of only $8,000,000,000 it is easy to conclude that, merely from the standpoint of the national wealth a food manufacturer is a key man!

We are not at present concerned with the generalization inplied in the above figures. The fact that food is taking its place in the ranks of Big Business gives us pause. Does not the fact imply a challenge to the man engaged therein to be satisfied with nothing short of putting the food business in the front ranks in the world of human values as it is in the realm of finance?

Live and Let Live

THE AMERICAN FOOD JOURNAL is quite in sympathy with the Indiana Wholesale Grocers' Association in its efforts to straighten out the matter of conflicting interests among the grocers and pharmacists.

While it is true that the average grocery store carries a few household remedies, the Indiana association points out that in many localities this practise prevails because of the scarcity of drug stores. Emphasis is laid on the fact that the lack of these simple remedies might easily lead to serious illness.

On the other hand, the drug stores are cutting into the trade of at least a dozen other special lines; candy, stationery, books, electrical supplies, among others.

Certainly there is no scarcity of groceries!

Moreover, there are a number of points involved in the handling of food stuffs with which the druggist is ill equipped to deal; matters of standards, reliability of brands, labeling to show contents, etc. These are only a few of the questions which the grocer tackles as a matter of course but which would hardly fit in with the busy life and experience of a buyer in a totally different field.

The whole question of the distribution of foods and food products is so intimately bound up with the health and welfare of the entire country that it would seem to be reasonable and withal, sensible, to simplify this problem as much as possible.

FOOD AND HEALTH EDUCATION

Edited by WINIFRED STUART GIBBS
Assistant Editor, BLANCHE INGERSOLL

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Socializing the Recitation

Making the Domestic Science Classroom a Gateway to World Service

OUR grandmothers talked about being neighborly, we speak of being socially minded, and the teacher who is, in the broadest sense, successful is she who prepares her students to play sympathetic parts in a world that stresses social values.

To accomplish this end each individual recitation must be planned and carried out with a view to making it fit logically into a program of social activities. The relationship need not be expressed in so many words, in fact quite frequently it can not be so stated, but the underlying thought in the mind of the thoughtful teacher is there and directs her intercourse with her students.

The domestic science teacher and the instructor in home economics are fortunate, in that they need not labor to make such relationships clear. The very nature of their subject matter does this for them almost automatically; the point is, that from its very obviousness they may easily let the relationship with the social fabric be covered up, hidden temporarily under the minutiae of teaching technique.

THIS is a plea for fresh interest, fresh vision.

The splendid work that is going forward everywhere, in the secondary school, the high school and the college of household arts, is for the most part, taking care of what might be called the primary relationships of every day recitations to the home life of the students; the lesson in food values is being taught with due thought for the daily meals, that of clothing is related to actual costs and actual home budgets.

Do we always take the one step farther that will carry our students over into the country of civic and national service?

SUPPOSE every lesson in food study courses were to throb so vitally with challenge that each student left it to preach the gospel of good nutrition TO EVERY ONE WITH WHOM HE CAME IN CONTACT! Should not we soon have a nation made over?

But, one might say, would not such a course make of the children self-conscious little prigs?

Not if the teacher so socializes the recitation as to inspire the students, firing them with the zeal that translates itself almost automatically, into unconscious spreading of the gospel of nutrition and health.

TAKE the question of the opportunity which the teacher in the secondary school has of sowing seeds for the reaping of the teacher of vocational guidance.

If every recitation on domestic science is planned so as to skilfully relate the subject matter to the individual interests represented by the children, the results will be more than worth while. The girl who wants to manage a tea room will see new possibilities in her food lessons; the student who is ambitious to "do social work" will store away in her eager mind food and nutrition facts that she may apply them later to real problems of real children; she who aspires to enter the field of public health will hardly rest content until she has canvassed her community for information regarding all organizations working in this field, and she will, by the same token, realize afresh how closely food study courses link up with the very fundamentals of preventive work in public health.

It is for the teacher to hold high her own torch of socially minded understanding, and the tiny tapers of her students will catch fire spontaneously, until, by the grace of God, they illuminate the entire highway of health and happiness!

Winifred Stuart Gibbs.

Window Shopping For Foods Material

Suggestions for Obtaining a Variety of Illustrative Material from New Sources

Food and Health Education.

WINDOW shopping has entered the field of home economics education!

One of the editors of Food and Health Education spied in a Fifth Avenue window a most attractive collection of "ideas for blackboard instruction." The window was that of the Dennison Manufacturing Company, makers of tissue paper novelties; the ideas for blackboard instruction were designs by Winnifred Fales of Columbia University and showed, in post card size dainty landscapes and other decorative bits. The various cards, they were really tiny posters, were grouped in a frame and the whole was resting on a tiny easel.

Now the distinguishing feature of the group of pictures was the fact that each little design was developed in cut outs and crinkled tissue paper, the products of the service division of the Dennison company.

Food and Health Education has been fortunate in securing the cooperation of the company for the purpose of adapting Miss Fales' ideas and those of the Dennison service bureau to a home economics project.

It seemed to us that while the material available in advertisements of foods and other sources is admirable for children's poster work in food study classes, that such material may, at times be difficult to secure. It might also come about that a teacher of foods would have used so much of such material as to welcome suggestions for obtaining a variety from other sources.

The first step was to consult Miss Rusk, director of the service bureau. It was found that the bureau had in hand numerous cut-outs of foodstuffs and that its artists were ready to work with Food and Health Education in designing from these a set of educational posters for foods teachers.

So the editors put their heads together and discussed ways and means.

"What lessons," they asked themselves, "best lend themselves to this type of illustration? Which of these shall we choose for presentation?"

It was decided that we should perhaps be most helpful if we attempted only to be suggestive, leaving the idea with our readers for their own adaptation.

Sam Squash:
"Come on, Tom Turnip,
we're in that book."

This month, therefore, we reproduce only three of the posters which were worked out; these are:

1. Introductory, "Food and Health Education."
2. A general vegetable lesson, "Sam Squash."
3. A bread lesson, "Brown Bread."

The next step was to submit the above outline to Miss Rusk, who searched the Denison files for appropriate cut outs.

These cut outs were studied, were grouped and re-grouped, until the finished designs were completed.

A service bureau artist made sketches of the designs, and here they are! In color they are most attractive.

Does it not open up several avenues for the teacher of food study courses?

She may use such a set of posters as a basis for lessons in the history of foods, in food values, in meal planning, in marketing, in cookery and in serving.

Then there is the matter of coordination.

Teachers of design and drawing might like to have their students make the preliminary groupings and drawings; teachers of English would have an opportunity for work in jingle and verse writing; teachers of textiles and clothing might offer suggestions in choosing the cut outs with appropriate costumes, while teachers of hygiene might like to join the cooperative project by working out a special set of posters to be used in teaching all of the "rules of the health game."

Teachers who are interested to adapt the idea to the needs of their own class rooms may write, either to Miss Rusk, Director Service Bureau, Dennison Manufacturing Company, Fifth Avenue, New York City; or to Food and Health Education, 37 West 39th Street, New York City.

Information as to cut outs available, how best to proceed in individual projects, etc., will gladly be sent, to any one interested.

Brown Bread for Big Boys and Girls.

Clothing as a Factor in Nutrition

A New Idea for Coordination Between Courses in Clothing and Nutrition

By LOUISE PHILLIPS GLANTON,

Kansas State Agricultural College

Dress made in Paris, 1854

THE coordination between clothing and hygiene is readily apparent but the relation of clothing to nutrition is often disregarded by the teacher. A part of the food we eat is used to create energy or heat in the body, and a certain amount of heat is necessary. But on the other hand, if the body becomes overheated, many body processes are seriously effected. Clothing is a factor both in conserving and in dissipating heat and has therefore a most important relation to nutrition.

We employ various devices to conserve the body heat in winter, while in summer we use all available means to promote ventilation which dissipates heat. Two thousand years ago the people in Norway wore close fitting garments made of skins, while the Romans and Greeks wore the toga or the himatian. The Egyptians in that warm country seem to have worn not much of anything except veils, if the pictures are to be relied upon. The styles are regulated by the prevailing temperatures, a very sensible, hygienic course to pursue.

In the case of human beings it has been abundantly confirmed that cold increases heat production. It is just the same as burning more coal in the furnace on a cold day in order to maintain the temperature of the house. In order to furnish fuel for the exercise of "chemical regulation" more food must be injested or living tissue must be consumed. It is very much more convenient, economical, and satisfactory in every way to prevent the increase of heat production by keeping fairly warm. This may be accomplished by living in warm atmospheres or wearing garments which hold a layer of warmed air next the skin.

It is a well established fact that clothing is often an important factor in the regulation of body temperature. Under ordinary conditions a person quite without clothing loses heat much more rapidly than when wearing even a small amount of covering, and that of the thinnest kind. In 1920 Talbert reported that the parts of his own body when covered by clothing were about 1 deg. F. warmer than the same parts when uncovered.

All the authorities agree that the temperature of healthy, warm blooded animals is kept about the same, regardless of whether the thermometer registers 96 deg. or 14 deg. While the essential mechanism for the regulation of the body temperature is nervous, heat is furnished by oxidation of food stuffs, and air thus warmed is held in contact with the skin by the clothes on the outside. If heat is unduly lost, there is a waste of energy, a drain on the life forces. In cold weather people not only should eat foods higher in fuel value than they do in summer, but wear warmer clothes especially when out of doors. There is a possibility that subcutaneous fat is an important factor in regulation of temperature.

Infants being so much smaller than adults, will lose heat more rapidly. Though it must not be forgotten that nature has made some provision for taking care of the difference in heat loss. Since an infant produces 90 calories per kilogram in 24 hours while an adult produces only 32 calories, great care must be exercised in clothing helpless infants, so that they may be warm but not overheated in either winter or summer.

While it is desirable to keep warm, it may even be dangerous to be too warm for long continued periods. The metabolism of infants is increased by heat just as is the case in any simple chemical reaction. This raises the temperature and thus a vicious circle is established. Various experiments have shown that high temperature increases the number of bacteria in the intestines, decreases the amount and effectiveness of the gastric juice, and diminishes the appetite.

Children not only do not grow as rapidly in hot weather as when the temperature is lower, but actually lose weight unless water is taken very copiously. Much of the skin trouble, such as prickly heat, boils and the like to which children are subject are due in a large measure to their being "over clad." The remedy is the removal of a large part of the clothing. At the Johns Hopkins hospital even the most delicate children never wear more than a shirt and dress in addition to the diaper. Babies are sometimes wrapped in all wool blankets on an August day with the temperature of 95 deg. F. and the mother wonders why the little thing frets so. Upon inquiry, the fond mother will say, "See what a cold he has already." The wonder is that he has survived at all, that he is able even to fret.

It must be remembered also that all animals produce heat in direct ratio with the amount of physical exercise taken. Thus a man who sits still in a cold room in winter must be better protected by clothing than one who runs a foot-race; though, the runner needs protection after the race to prevent too sudden changes of surface temperature. The heat metabolised by exercise should be allowed to radiate freely in warm atmospheres, but evaporation of perspiration in cold air must not be rapid enough to produce chilling. Light weight fabrics with many

1923 style contrasted with 1854

dead air spaces, such as sweaters, are admirable for this purpose. Many athletes habitually wear sweaters for this reason.

Dr. Haven Emerson recently found that 75 per cent of all absences from classes in a high class boarding school for boys, were due to trouble in the respiratory tract, where are situated the parts most quickly rendered susceptible to infection by rapid lowering of temperature. In spite of the fact that men wear so much warmer clothing than most women do, it is the former who are the pneumonia patients in a majority of cases.

When in warm rooms the heat of the body should be allowed to escape without the formation of perspiration. In order to accomplish this purpose the warm outer garments should be removed upon entering a room where the temperature is 70 deg. F. or above.

This brings us to the question of what qualities in fabrics make suitable materials for garments to prevent undue loss of energy. Does the cut of the garment make any difference? Is material or texture of a garment the important point in heat retention? The conclusions of authorities who have investigated this question are that heat is retained by fabrics made of any fibers which are so arranged as to hold the maximum of air. Therefore the way to keep warm in the coldest weather and thus conserve body energy is to wear clothing with many air spaces, such as knitted undergarments and outer garments of pile fabrics. All fabrics should be soft enough to lie close to the body.

It has been proven beyond the shadow of a doubt that nothing can make one dizzier, more nauseated, or generally uncomfortable than being too warm without proper ventilation. Evidence seems to point to the conclusion that stagnation of the air is the main cause of the distress. Dr. Rosenau of the Harvard Medical School says that "heat stagnation" is one of the most fruitful causes of many obscure complaints. He does not point out the direct connection with poorly ventilated garments but the inference is quite plain.

When infants and young children die in great numbers during an excessively warm summer, the quality of the food is usually called in question. In most of the studies of such conditions, however, there were found a high percentage who died of trouble unconnected with the gastro-intestinal tract but directly with the central nervous system. Heat strokes are not uncommon among infants and young children who have not been exposed to the direct rays of sun at all, but kept in unventilated rooms, dressed in warm clothing, and often in rubber diapers. Lack of ventilation is directly connected with infant mortality in a way that leaves no doubt as to the importance of the free circulation of air over the whole surface of the body.

Hygienists have found that when the supply of air is cut off from the surface of the human body, symptoms develop in every way similar to those manifested by the varnished animals. These symptoms, even in a mild form may upset the workings of the digestive tract, which is so largely regulated by nervous control.

The most common way of preventing access of air to the surface of the body is by wearing many layers of fabrics more or less impervious to air, made into garments that fit closely and tend to restrict free movement of the air in contact with the body. According to Hutchinson, "The chest protector and the everlasting flannels are just as repugnant to an intelligent hygienic sense as they are to the "sense in us for beauty," and have done more harm to the species than any two beauty-born absurdities that can be mentioned. We do harm to our health by overloading ourselves with clothing and overindulging ourselves in the luxury of warmth."

Many otherwise sensible people are careless of the waste of energy from ill fitting shoes. A number of tests have been made by the United States Army Medical Corp upon soldiers in whose shoes were put various objects which produced discomforts. In all cases there was increased metabolism with a corresponding rise in the respiratory quotient. There are reasons for believing that comfortable people not only waste least energy but have most initiative, and produce the best work of the world.

As for high heels, calculations show that a woman of 5 feet 4 inches, weighing 137 pounds expends 56 pounds of energy in holding an erect posture when wearing heels an inch and a half in height. Goldthwait has cured a number of distressing disturbances of the alimentary tract by causing patients to resume natural postures through proper exercise and suitable clothing. Zuntz and his associates in Berlin found that because of increased muscular tension, the maintenance of an unnatural posture require a measurable quantity of energy over that required to hold the body naturally. Any garment which shifts the balance in any way is a disturber of nervous equilibrium.

Clothing should be light in weight because of the extra energy required to carry this burden and the consequent fatigue, physical and nervous. Highly napped, or pile fabrics conserve the heat and are relatively light in weight. Silk is of the greatest hygienic value because of its lack of weight.

For years there has been a well defined conviction that tight clothing, especially that constricting the waist, is a great detriment to health. But there was no experimental data to prove the point. Three or four years ago Kroeber made a study of the girth of waists and the width and length of skirts from 1854 to 1920. Mosher compared those tables with figures showing the height of women students in three colleges of the United States covering a period from 1890 to 1921. As the pressure over the viscera decreased, and the skirts grew lighter in weight, women students grew taller. Perhaps there are those who will say that these facts are not in the relation of cause and effect. Who knows? To paraphrase Hamlet, "There are more things in the science of hygiene than are dreamt of in the philosophy of most of us."

Promptness and Health

By SUSANNA SCHNEMAYER

AN effective way of improving the children's food and health habits and at the same time curing them of chronic tardiness was discovered by Leonard Crumpacker, principal of the grade school at Windom, Kansas.

The Red Cross nurse examined the children and found a number of "underweights." The nutrition specialist from the State College came and explained the use of the daily health calendar.

"Say," he said, "I have an idea. My biggest trouble is tardiness. Can't we add that as an item to the calendar? It's a serious ailment here of long standing. I've tried every remedy but none gave any satisfactory amount of relief."

It was decided to offer a reward of one-fourth day holiday each month for keeping the health calendar if there were no tardy marks.

Two months later the nutrition specialist returned and was surprised to see the improvement in the general appearance of the children. They looked healthier and brighter and were gloriously happy. Then she learned how it happened. They had kept their health calendars religiously. Working for the holiday gave them a strong motive. They had had one holiday and it was almost time for the second one. The holiday was spent in games in the gymnasium. Only two children in the room had been tardy and so lost their holiday, but they said it would surely never happen again.

The room had been divided into two teams and captains were elected. Each

(Continued on page 531)

"Milk for the Whole World"

A Short Health Play That Anyone Can Produce

THE following short health play, by Myrtle L. Barger, has been produced so successfully by the Philadelphia Inter-State Dairy Council and the teachers of several states that we are publishing it for the benefit of other teachers in other states. The costumes, music and dances combine to make this a very attractive play which can be produced by any teacher. It is published by the National Dairy Council, who realize that the children's own originality and spontaneity add more to a play than can be suggested in writing; also that conditions in different schools are varied, and urge that such minor changes be made as will make the play most appropriate and adaptable to the participants and the local situation.

A cosmopolitan group

Costumes and music as well as copies of the play may be secured from the Philadelphia Inter-State Dairy Council.

"Milk for the Whole World"

L. and R. mean the Left and Right of the characters on the stage when facing the audience.

Scene—A table with a pitcher of milk, and paper cups, on the stage at R.

(Characters)

John—A sturdy boy about 10 years of age.

Mary—A sturdy girl about 10 years of age.

Doctor—A taller, older looking boy who can becomingly wear long trousers. If possible, he should carry a case.

Japanese Children—A girl and boy of about 10 years of age and the same size; dark complexioned, small boned and delicate looking.

Lapland Children—A girl and boy of about 10 years of age and the same size.

Italian Children—A girl and boy of about 10 years of age and the same size; dark complexioned and graceful.

Arabian Children—A girl and boy of about 10 years of age and the same size; dark complexioned.

Dutch Children—A girl and boy of about 10 years of age and the same size; fair haired and sturdy looking.

Uncle Sam—A rather tall, slender boy.

(Enter John and Mary. They run laughingly to table, and each drinks from a cup. They hear doctor enter L. and run to him, meeting him in centre.)

John: Good morning doctor. (Shakes hands.) I have something to tell you. I am drinking a quart of milk every day just as you told me to, and I feel great. I can pitch a ball straight over our house now. (Makes motion as if pitching ball.)

Doctor: (Feeling muscle in John's arm.) Fine work, John, I am—

Mary: (Breaking in eagerly.) I am drinking a quart a day too, doctor. See my rosy cheeks?

Doctor: You are both fine specimens of American children. Uncle Sam will be proud of you some day.

John: But doctor, what do the girls and boys of other lands do? Do they all get milk from gentle dairy cows?

Doctor: John, I am very sorry to say that all do not. The girls and boys in those nations where milk and the other dairy products, cheese, butter and ice cream are used, grow to be the strongest men and women. For instance, the boys and girls of Japan get practically no milk. Consequently, the Japanese are a small race of people. (During his last sentence, they all move to R. and sitting down near front. Doctor may sit on chair with John and Mary on floor at his feet.) Doctor continues—Here are a couple now. (Pointing.)

(Enter Japanese Girl L. and Boy R. They execute simple Japanese dance as described on page 8. When finished they stand in centre at front).

Japanese Girl:

I am a little Japanese,
We have few cows in dear Japan;
I eat green things like stems and leaves
But never see a nice milk man.

Japanese Boy:

I haven't had a drink of milk
Since I was a wee, wee baby;
If I had some of your pure, rich milk,
I'd be as large as you are, maybe.

(They skip to the rear, Girl extreme L. and Boy extreme R. and stand.)

Doctor: In far north where it is too cold for a dairy cow, our Lapland friends use reindeer milk.

(Enter Lapland Girl and Boy L. They execute simple Lapp dance as described on page 9. When finished they stand in centre at front.)

Lapland Girl:

We are Little Laplanders,
We feel fine and dandy,
Because our splendid reindeer milk
Is always very handy.

Lapland Boy:

We don't mind the cold a bit,
Nor worry the winter long;
For rein-deer milk for boys and girls.
Keeps us well and strong.

(They skip to rear and stand, Girl L. of Japanese Boy, and Lapland Boy R. of Japanese Girl.)

Doctor: There are no broad pasture lands in Italy, so goats are pastured on the roadsides and rocky hills and milked in the streets.

(Enter Italian Girl and Boy R., Boy with right hand holding Girl's left hand, hands held level with shoulders. When they reach centre front, stand for recitation.)

Italian Girl:

'Neath northern Italy's sunny skies
We dance the livelong day.
Our goat's milk makes us feel so fine
We always laugh and play.

Italian Boy:

We like soft cheeses very well
For they're made of milk, too.
I'd drink a glass this very minute
If I had it, wouldn't you?

(They execute simple Italian dance described on page 12. Then they skip to rear, and stand—Girl R. of Lapland Boy, and Italian Boy L. of Lapland Girl.)

Doctor: Nor could our dairy cow live on the dry desert sands. The Arabs who live there use camel's milk.

(Enter Arabian Girl R. and Arabian Boy L., each with arms folded. They execute simple Arabian dance as described on page 10. When finished they stand in front.)

Arabian Boy:

We Arabs are tall, and sturdy and strong
Nor mind the heat and sun;
We use camel's milk the whole life long
And cheese most by the ton.

Arabian Girl:

And buttermilk, we like that too;
It keeps us happy and gay,
We're real milk soldiers in our land
And like a quart a day.

(They step to rear, and stand—Girl L. of Italian Boy, and Arabian Boy R. of Italian Girl.)

Doctor: The sturdy Hollanders probably have the finest dairies in the world. Their main foods are milk and the dairy products.

(Enter Dutch Girl L. and Dutch Boy R. Hop to centre with hands on hips, and recite.)

Dutch Boy:

You can't beat us for strength and health;
We who in Holland dwell,
We eat real butter, cheese and milk
Which keeps us strong and well.

Dutch Girl:

We don't eat sweets and candy;
We don't eat very much meat;
But brown bread, butter, cottage cheese
And cow's milk pure and sweet.

(They execute simple dance as described below. Then they hop to rear, and stand centre.)

Doctor: You see, John and Mary, children the world over need milk. You should be very grateful that in America we have so many splendid dairy cows.

(Enter L. Uncle Sam. He bows to line of foreign children. They all salute him.)

Uncle Sam: (Standing at one side half facing foreign children and audience.) It is true, the American Children are fortunate to have so much milk within easy reach. Since Uncle Sam keeps so many cows for his children, I think it is only fair that they drink plenty of milk, in order to grow to be strong, healthy citizens for Uncle Sam. Come everyone, let's sing a song to our good friend "MILK."

(Uncle Sam walks over to table as he talks, and hands cups to Mary, John and foreign children. All hold cups high above heads. All—(Tune: "Merrily We Roll Along.")

Sing a song of pure milk, pure milk, pure milk,
Sing a song of pure milk,
A body round and healthy.
All your working muscles, muscles, muscles,
All your working muscles,
Be strong to make you wealthy.

(Song by pupils of the Walton School, Phila.)

(Either draw curtain or exit as song is repeated. Foreign children exit, Dutch children leading, others falling in line next to partners, with Uncle Sam between Mary and John at end of line.)

Geisha Dance
(Japan)

Dancers have Japanese paper fans in their right hands with which they fan themselves with a quick, jerky motion during the dance, keeping in time to the music.

Use a small running step, lifting the foot as much as possible without losing time of music.

Measure of Music

FIGURE 1.
Facing each other, run around each other to right, finish in starting place 4
Then turn and run in opposite direction 4
Stand facing audience with knees close together, bend knees, one measure, raise, one measure.
Repeat once 4
Repeat all above 16

FIGURE 2.
Run forward obliquely to right ... 2
Backward to place 2
Run forward obliquely to left 2
Backward to place 2

FIGURE 3.
Repeat all of Figure 1 32

MUSIC: Fan Tan Polka will be suitable for above, or any music of an Oriental tone in time having 8 or 16 measures to strain in 2/4 time.

Lapland

Step generally used will be a heavy running step with bended knees and stamping foot to accent time.

Music: 2/4 time.

Start on L. foot.

FIGURE 1.
Run around in shape of the figure eight 16

FIGURE 2.
Side by side facing front. Put right heel out to side (count 1), then draw right foot back of left touching toe to floor (count 2), then step to right with right foot, draw left foot in and stamp with right 2
Same to left 2
Repeat above 4
Take right hand and heavy running step around each other 4
Repeat all of above 8

FIGURE 3.
Repeat Figure 1 16

Arabian Folk Dance
(Arabia)

Step generally used throughout dance will be known as "hop step," and description as follows: Music is 2/4 or slow Polka time: Step out on right foot (count 1 and), step out on left foot (count 2 and). This takes one measure of music.

FIGURE 1.
Stand side by side and use hop step around large circle; finishing in starting place at end 16

FIGURE 2.
Face each other; one kneel, other go around 8
Opposite kneel and reverse going around 8

FIGURE 3.
Side by side. Step to left with left foot (count 1), draw right foot to left (count 2).
Repeat three times 4
Repeat all above to right 4
Then repeat all above 16

FIGURE 4.
Same as Figure 1 16

Dutch Dance
(Holland)

NOTE: Wooden shoes should be worn by the dancers, if possible. Description of Mazurka step generally used throughout dance. Count three to each measure of music.

Music is slow, with each count accented.

FIGURE 1.
Both dancers standing side by side facing forward. Three Mazurka steps to left (count 9) and on fourth measure, stamp the feet twice, one to each count, and rest on the third count 4
Repeat same to right 4
Repeat all 8

FIGURE 2.
Facing each other, take right hands. Step out on right foot and hop three times, moving forward (count 1, 2, 3), then out on left foot (count 1, 2, 3). again on right foot (count 1, 2, 3), then stamp feet twice commencing with left (count 1, 2) and rest (count 1) .. 4
While doing above, move around each other in small circle. Change to left hand and left foot, then repeat going around each other in opposite directions 4
Repeat all 8

FIGURE 3.
Repeat Figure 1 16

Music: Any Mazurka or Polish music in 3/4 time may be used.

Tartantella
(Dance of Italy)

NOTE: Boy on left side, girl on right side. Boy with right hand holding girl's left hand, hands held high up nearly level with shoulder.

FIGURE 1.
Four skipping steps forward obliquely to right 2
Four skipping steps backward to place 2
Then repeat above forward to left and backward to place 4
Then repeat all above 8

FIGURE 2.
Facing each other; take right hands. Step on right foot, cross left raised in front, hop on right (count 1 and 2) 1
Step on left foot, cross right raised in front, hop on left (count 1 and 2) 1
Repeat above 1
Repeat above 2
Then run around each other in time; 8 steps (2 steps each measure) 4
Then repeat all the above in Figure 2 8

FIGURE 3.
Both facing forward. Hop forward to right on right foot four times .. 2
Hop forward to left on left foot four times 2
Step back eight steps, 8 counts (two counts, to a measure) 4
Repeat all above in Figure 3 8

Tartanella Music, 6/8 time, lively.

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Philadelphia Inter-State Dairy Council
721 Heed Bldg., Philadelphia, Pa.

THE STORY OF FOODS AND FOOD PRODUCTS

Supplementary Reading for Food Study Classes

Condensed Milk

By HELEN RICH BALDWIN

There has never been a time in the history of the world when so much thought and study has been given to the subject of milk. The value of whole fresh milk stands undisputed and bulletins regarding its nutritive value, composition and uses are available to teachers and health workers from many sources.

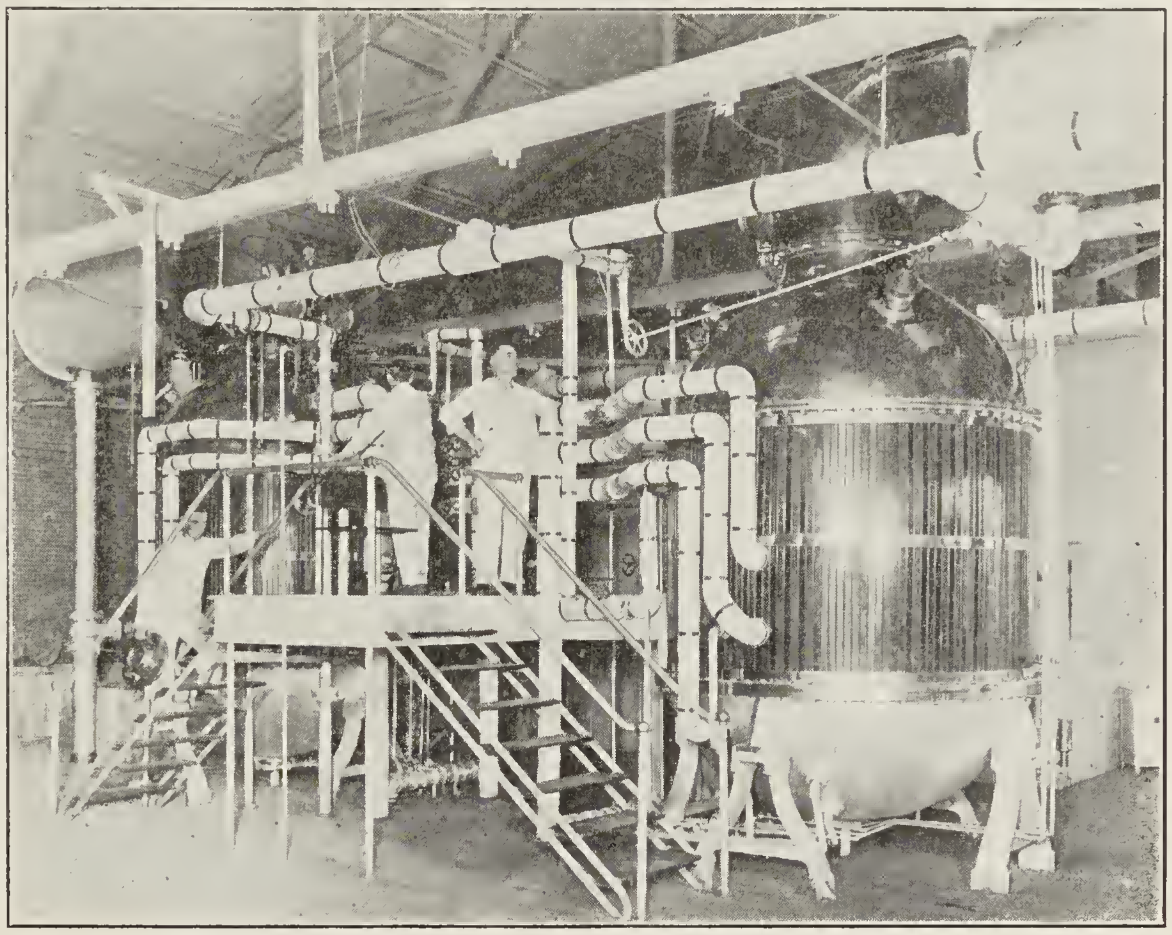
There are three other kinds of milk besides bottled fluid milk; condensed, evaporated and dried, all of which have their place in the human diet. In order to inform the teaching profession regarding the history and manufacture of one of these health foods this article on condensed milk is written, using the process of manufacture of Borden's Eagle Brand condensed milk as an example.

The idea of making condensed milk was conceived by Gail Borden in 1857 when he first saw the need of preserving milk and putting it up in a form that could be easily carried about, so that it would not be necessary to be where cows were, in order to have pure milk. He was on a crowded immigrant ship which took months to cross the Atlantic. There were many babies who died from starvation because the only way of providing food for them was by carrying cows and milking them on the voyage. The milk was poor and scanty due to unnatural conditions; there was no ice for keeping the milk and it became dirty and sour very quickly. Gail Borden with pity in his heart for these suffering babes resolved to find some way to preserve milk for them.

He returned to America filled with the idea of inventing a pure canned milk. Of course he was ridiculed but he started to experiment in a little village called New Lebanon, N. Y. In this community lived the "Shakers," a group of people with strange beliefs. They were opposed to war, they had no personal property but owned everything in common. They were a peace loving people and were willing to assist a man who was striving to help the people in his country.

These people gave him the use of their laboratory and he had an abundant milk supply to experiment with. He used only the clean milk. To get clean milk, Mr. Borden made rules for farmers, requiring cleanliness in milking, scalding utensils, quick cooling and delivery so materials for his experiments would be as fresh as possible. The same standards used then are now used today and the slogan "Clean Milk Kept Clean," is still emphasized.

After months of experimenting Gail Borden succeeded in producing a canned milk that would keep indefinitely. The process of manufacture invented at that time has of course been improved upon but the fundamental principles are still the same. Following is an outline of the methods of manufacturing condensed milk now used in one of our modern condenseries.



The huge vacuum pans in which the milk is condensed

The very first and most important step taken toward insuring the purity of condensed milk is to have a fresh, safe and reliable milk supply to use in its manufacture. To do this several factors have to be taken into consideration. The condenseries are situated in farming districts so that the milk will have to be carried only short distances. The herd from which the milk is drawn is composed of several breeds of cattle. Pediatricians and dieticians agree that milk produced from a mixed herd is safer and more preferable than milk drawn from one breed of cattle or an individual cow. The herds which produce the Borden supply are composed of Jerseys, Guernseys, Holsteins, Ayrshires, Durhams, Brown Swiss, and a type of cattle known as New York State cattle. The farms from which the milk comes are inspected and skilled veterinary surgeons examine the cows to make sure that they are not only free from any trace of disease but to see that they are well fed and well nourished.

At milking time in order to offer the least possible opportunity for contamination—the hair of the udders, flanks and legs of the cows are kept closely clipped. Just previous to milking the udder is wiped off with a clean damp cloth. The milkers dress in spotless white suits performing the milking with dry hands that have been previously scrubbed and thoroughly cleaned. After the first milk from each teat has been discarded, the milk is drawn into small mouthed milking pails, the mouths of same being covered with fine strainer cloth. These precautions are taken to exclude the possibility of dust and dirt contamination at milking time.

After the milk is drawn, it is taken immediately to a separate milk house

—not kept in the stable until a quantity is drawn sufficient to fill a forty quart can—but as soon as the milk is drawn from each cow it is taken to the milk house and rapidly and thoroughly cooled. The cooling is accomplished by pouring the freshly drawn milk through a strainer into cans which have been thoroughly scrubbed and cleaned preparatory to receiving milk. These cans are filled with the fresh milk, the lids are placed on and they are then buried up to their shoulders in a tank which contains cold running water, the temperature of which at all times is under 50 degrees Fahrenheit; here they remain until it is time to have them taken to the condensary. They are then loaded upon wagons or trucks and covered with a canvas cloth to exclude dust and dirt while en route to their destination.

Bacteriological analysis precedes the sale of milk

The trucks are unloaded from the outside receiving platform. The cans of milk are taken in at the receiving door of the condensary, and after the contents have been carefully inspected, weighed, etc., the cans are washed, sterilized and returned to the dairyman at the other door of the receiving room. The milk delivered to a condensary in the morning is condensed and canned the same day it is received. In this way the milk is brought fresh to the consumer.

As soon as the milk is received in the receiving room it is inspected as to freshness, temperature and weight. Samples are taken from each can and put into a jar with each particular dairyman's name on it. This is tested for its composition, bacterial count and fat content.

The milk that is used in making condensed milk must be absolutely standard. This is particularly true regarding the amount of butter fat in the milk. If this is deficient for any reason, pure cream is added until it is exactly the right quality. Then the accepted standard milk is brought through sanitary pipes directly into large copper tanks called, "heating wells." Here the temperature of the milk is gradually raised to the required degree (206 degrees Fahrenheit), and held there for about five minutes. From these heating wells, the milk passes through pipes into big mixing wells where the sugar is added in sufficient amount to insure preservation of the finished product. The amount of sugar added depends somewhat upon the amount of sugar already in the natural milk.

After the sugar is mixed with the milk and the ingredients for making condensed milk are just exactly in the right proportions, it is then ready for "condensing." The milk and sugar mixture is drawn through pipes into "vacuum pans," where it is held for a period of from 1 to 1½ hours, the temperature being gradually lowered. Each pan contains enough to make a finished batch of about 7,500 pounds of condensed milk. A large coil runs all around the interior of this vacuum pan and contains the steam for heating the milk to the right temperature. The milk soon becomes a seething mass, gradually shrinking and condensing to the proper consistency by the evaporation of the water element in the milk. This process of condensing milk in vacuum is the most important part of the whole operation. Its purpose is to thoroughly heat, mix and blend the milk at a low temperature and still preserve its vitamins (growth promoting properties). It also carries off by evaporation certain undesirable volatile substances. This vacuum method renders the protein of the milk more easy to digest and assimilate than the protein of bottled fluid milk.

From the mixing wells the condensed milk is drawn off into pipes surrounded by running water, cooled and passed into the filling machines. The cans are tested by vacuum and any one of them having the slightest imperfection is automatically thrown out. The perfect cans are subjected to a temperature of 700 degrees Fahrenheit, cooled and immediately filled and sealed without the use of solder. The cans are labeled and wrapped and are then ready for boxing and shipping.

Attention is called to the fact that from the time the milk enters the vacuum pan until the time the cover is fastened onto each individual can the entire process is automatic and the condensed milk is not allowed to come in contact with the air; thus avoiding contamination and oxidation. Even after such precautions, a still further test is made to insure its quality by sending a sample can from each batch to the laboratory at the home office, for a complete analysis before the batch is released to the trade. The picture shows one of the bacteriologists making a sample determination.

Eagle Brand Condensed Milk as a finished product is just milk—pure, fresh, whole cow's milk—with only the addition of pure cane sugar. It has plenty of protein or body building material; the fats are present; it contains bone material (ash); it has all three vitamins; and contains extra carbohydrates or energy units so essential to children. Because Eagle Brand contains only substances which are beneficial to the human body and because it has proved its value as a life saver to millions of little lives it is called a health food.

Date Song

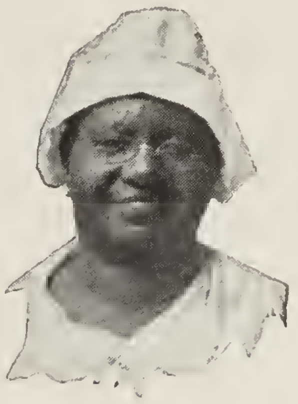
By WINIFRED STUART GIBBS

Over the desert,
Across the plains,
Swaying on camels,
Chugging on trains,
Sailing on ships,
Piled on a van,
Truly, a date
Lives a busy span!

Ruggedest iron
For us they bring,
To make us strong
To dance and sing;
Other minerals
Too they bear;
Was ever golden
Fruit so rare?

Sliced in cereal,
My! They're sweet!
Most 'licious food
For a child to eat!
(Courtesy "Our Family Food.")

AMERICA'S MOST FAMOUS DESSERT
JELL-O
TRADE MARK REG. U.S. PAT. OFF.
A MIXTURE
SPECIAL PACKAGE
NET WEIGHT 26 OZS.
MAKES FOUR QUARTS
CHERRY
PURE FRUIT FLA
VEGETABLE COLOR
This package makes four qu Jell-O. Serves forty to fif sons according to size of p
Dissolve the contents of th package in four quarts of boiling and set in a cold place to harden
If only part of the contents is made up at one time, allow exa one pint of boiling water for ea ounces (92 grams) of powder.
Further directions of great importa given on each of the two side panels package. Be sure to read them.
THE GENESEE PURE FOOD C
LE ROY, N.Y.



"Mammy" who makes the desserts with the home-like flavor at The Planters' cafeteria in New York. ~~

The Planters' Hotel, now a Cafeteria

The old Planters' Hotel--where Poe stopped-has been transformed into one of the most popular cafeterias of New York's financial district. And Jell-O is a favorite dish on the menu there. All cafeterias, hotels, lunchrooms, and institutions will find Jell-O an easy and profitable dish to serve. Particularly if they order the big size, the Institutional Package.

GENESEE PURE FOOD COMPANY
Le Roy, New York *Bridgeburg, Ont.*

Stop!

So little baking powder is used in baking that it pays to use the best.

There is no substitute for

ROYAL Baking Powder

Absolutely Pure

Each and every ingredient of ROYAL is wholesome. You would not hesitate to use any one of them by itself.

ROYAL is made from Cream of Tartar, derived from grapes.

Contains No Alum
Leaves No Bitter Taste

Practical Dietetics Pays the Coal Bill

A Problem in Applied Institutional Management

By ROSE STORM

The problem of feeding college students is an important and at times a very difficult one. In most dormitories and residence halls a trained dietitian plans and directs the meals but in sorority and club houses the steward is often a student who may know very little or nothing about food values. Students in their own house are apt to indulge in much open criticism if the meals are not satisfactory. This criticism coupled with the fact that the poor steward has only a limited amount of money to spend sometimes makes the task a disagreeable one.

Students of home economics in colleges giving that work find in the work of a steward an excellent opportunity to apply their knowledge of food values, marketing, meal planning, and [illegible]

To attempt to feed twenty-five healthy college girls, pay a cook and maid, entertain guests, and repair the leaking bathtub—all on twenty dollars per month per capita, is "some job." Many an experienced housewife would say, "It can't be done." And yet, "Here it is." A student at Iowa State College was so successful in accomplishing this task that it is worth passing on to others as a practical application of home economics.

Here is what she had to work with:

Twenty-five checks for $20 ea.		$500.00
Salary for cook	$60.00	
Salary for maid	35.00	
Estimated repairs	5.00	
Total without food		100.00
Amt. left for food		$400.00

This amount, when divided into quota per person for twenty-five boarders and five helpers made $.45 per person per day.

Not such a hopeful prospect, financially, but it had been accomplished by many others with more or less satisfying results. The real problem was not to obtain enough food at that price, but to serve to critical girls, food that would both nourish and please them. Since all purchases were made through a commission, the per capita figure does not represent market value of purchasing power.

Summoning her knowledge of dietetics, this stewardess reviewed her task, and laid down these minimum rules governing the planning of menus.

For each day:

- one pint milk per girl;
- fruit (fresh if possible) once;
- fresh vegetables, "roughage," once;
- two vegetables other than potatoes;
- meat only once;
- butter always.

For each week:

- eggs three times;
- bran in some form twice;
- hot bread only once;
- pastries (pie or cake) only twice;
- whipped cream at least twice.

No menu was repeated during two weeks.

Buying in quantities was, of course, cheaper than buying each day's needs, so instead of worrying through the night over "what shall we eat tomorrow," the menus were planned for two weeks in advance, and the order list made correspondingly.

Girls are usually considered hard to please, but the foundation of their choice is variety. Since they are only half awake at breakfast time, this meal

(Continued on page 534)

Vocational Education Meeting in Buffalo

NATIONAL and state leaders, supervisors, directors, teachers and others interested in home economics will have an excellent opportunity for getting better acquainted and for discussing their problems at the 17th annual convention of the National Society for Vocational Education to be held in Buffalo, New York, December 6, 7 and 8.

The plans of the convention include not only a well organized program of speeches and discussions,, but also a carefully arranged schedule of visits to schools maintaining unit home economics courses, to home-making centers, and to establishments where the training of home economics apprentices may be seen. The teacher training courses for home economics teachers will also be visited.

The program committee is busy arranging unusual things for the home economics sections. Plants where home economics products are manufactured may be visited by interested visitors. Home economics leaders and teachers from states outside of New York are urged to remain in New York State for the entire week.

Additional information concerning this convention may be obtained from the National Society for Vocational Education, 140 West 42nd Street, New York City.

Promptness and Health

(Continued from page 524)

team tried to make the best record. This friendly rivalry was another incentive.

The enthusiasm of the youngsters had spread into the homes; 18 out of the 25 children in the room said their parents had become very much interested. Six of the mothers were helping by making a special effort to serve the right kind of foods, others helped by reminding or by insisting upon the child's honesty in keeping the calendar.

Of the 28 children, 17 were drinking more milk, 17 were eating more vegetables, 17 were eating more fruit (not the same 17 each time), 8 had learned to eat breakfast regularly, 14 had overcome food prejudices, 12 were getting more sleep.

And tardiness was a thing all forgotten and past. There wasn't any.

This was the seventh and eighth grade room. In the room below, which included the fourth, fifth, and sixth grades, a similar plan was followed with even better results. Out of the 25 children in the room 16 were drinking more milk, 21 were eating more vegetables, 21 were eating more fruit, 18 were getting more sleep, 12 had overcome food prejudices and 8 had learned to eat breakfast regularly. Sixteen of the children said they were getting active cooperation at home. One boy who could not get milk at home was supplied with it by the teacher.

The children in the primary room also showed that they had learned something about better food and health habits. They gave a long list of foods they had learned to eat.

In another Kansas county a series of four nutrition health talks were given to a total of 201 children in several small town and rural schools. Four talks were given with intervals of one month between. At the end of the series it was found that of the 201 children enrolled in these various schools, 115 are drinking more milk. 122 are eating more vegetables, 148 are eating more fruit, 85 are getting more sleep, 56 overcame various food prejudices, 42 learned to eat breakfast regularly.

The most difficult habits to change were as follows, arranged in order:

1. Sweets between meals.
2. Fingers or pencils in mouth: brushing teeth.
3. Food prejudices.
4. Keeping the record.

The easiest things to do, in order, were:

1. Eating more fruit; washing hands before meals.
2. Sleeping enough.
3. Eating vegetables; drinking milk; chewing food more carefully.

The food prejudices overcome include a wide variety as milk, oatmeal, egg, potato, cabbage, tomato, peas, rhubarb, sweet potato, onion, grapefruit, soup, celery, greens, beets.

Cooperation at home consisted for the most part of reminding or of holding the child to strict honesty in keeping the records. Fifteen mothers made it a point to supply the right kind of food, five cooked more vegetables, one limited the child's sugar supply.

Although the scores recorded on the health calendars fluctuate instead of showing the steady and consistent improvement that would be desirable, yet the average scores at the end of the demonstration were higher than before, and the improvement in health was apparent in a general way, while some individual cases showed marked improvement.

It was evident that the teacher's attitude had a direct bearing upon the enthusiasm of the children and upon the interest of the parents; and all three influenced the results obtained.

The groups who kept the health calendars showed more improvement in their food and health habits than the groups who also heard the health talks but did not keep the health calendars.

Dinner Song

By WINIFRED STUART GIBBS

Dinner time is happy time,
Don't you think so too?
First, I wash my hands so clean,
As I ought to do,
Then I eat my soup and bread,
Golden brown,
With butter spread,
Tell you what,
It's fun to know
Just what foods
Will make me grow!

Next comes meat or eggs or fish,
Vegetables, a good sized dish,
And a baked potato hot,
This will always "touch the spot!"
Last of all
I have a sweet,
Fruit or custard,
Such a treat!
For my mother
Knows, you see,
Just what foods
Are good for me!

(Courtesy "Our Family Food.")

The Teacher's Foe

CHILDREN who are malnourished present a serious problem to the ambitious teacher. They rarely progress in school as they should. That one in three children of school age is undernourished has been graphically demonstrated by experiments in New York City schools.

How to overcome it

The Nutrition Department of the Borden Company, largest producer of milk products in the world, has observed over 500 malnourished school children during the past year and proved that Eagle Brand Condensed Milk is exceptionally valuable for the treatment of this dangerous condition.

Eagle Brand is pure, whole, cow's milk combined with sugar. Diluted to the special malnutrition formula, it supplies factors necessary for growth and health —proteins, vitamins, carbohydrates. Particularly it is rich in the energy units which are so important. Correct feeding and the careful observance of health rules will work wonders for the backward school child.

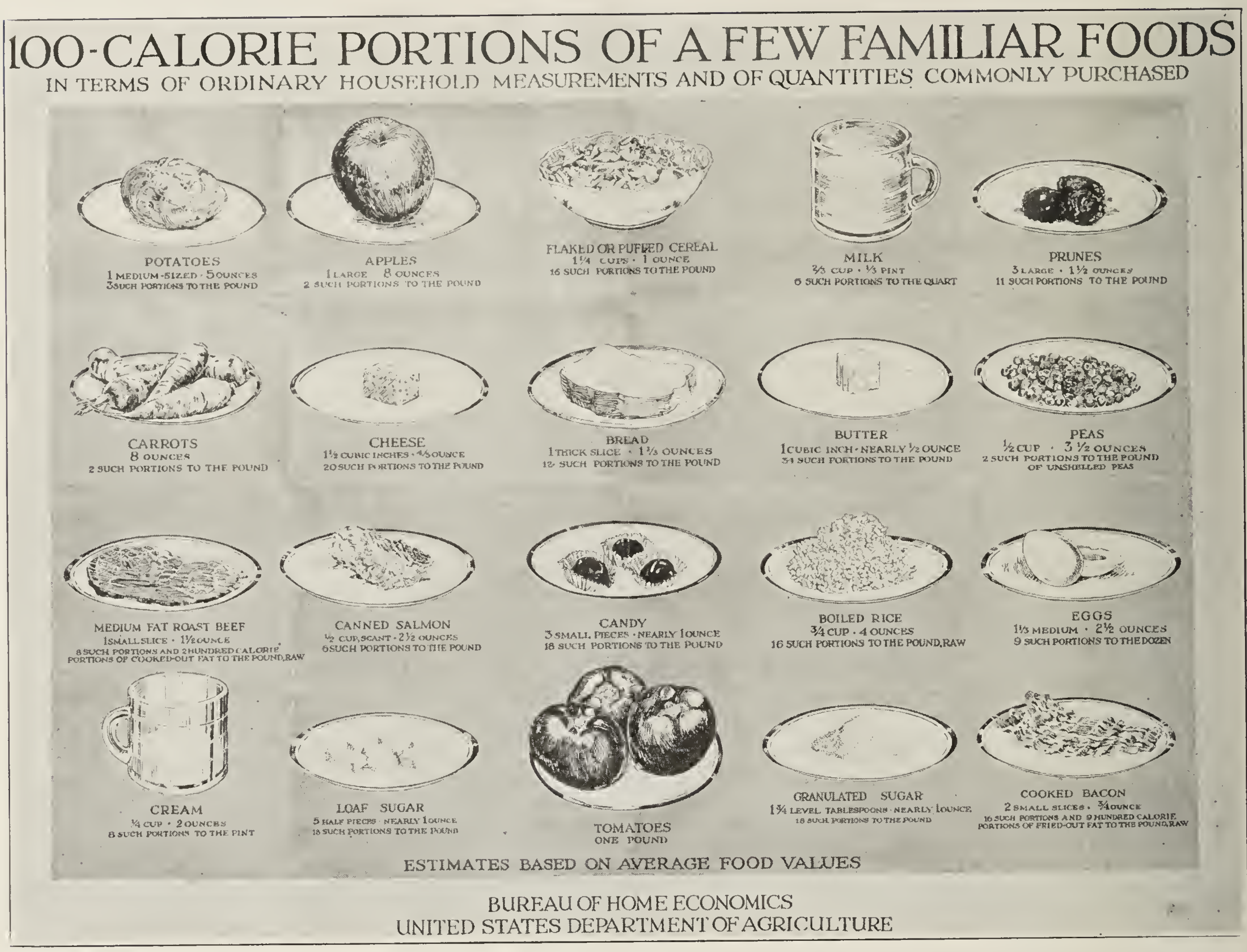
Send for "20 Suggestive Lessons"

Be the first in your school to start a health and nutrition class and earn the gratitude of your children, their parents and the whole community. The Nutrition Department will gladly show you how—absolutely free of charge.

This Department has worked out a careful set of lessons called, "20 Suggestive Lessons for Nutrition Class." These are based on the actual observation of hundreds of malnourished children and are the same lessons used by the Borden nutrition workers themselves.

With these lessons for a guide you will find it easy to begin this valuable work. Write us today. Address Nutrition Department, The Borden Company, Borden Bldg., New York, N. Y.

New Bureau of Home Economics Prepares a Helpful Chart


100-CALORIE PORTIONS OF A FEW FAMILIAR FOODS
IN TERMS OF ORDINARY HOUSEHOLD MEASUREMENTS AND OF QUANTITIES COMMONLY PURCHASED
POTATOES
1 MEDIUM-SIZED · 5 OUNCES
3 SUCH PORTIONS TO THE POUND
APPLES
1 LARGE 8 OUNCES
2 SUCH PORTIONS TO THE POUND
FLAKED OR PUFFED CEREAL
1¼ CUPS · 1 OUNCE
16 SUCH PORTIONS TO THE POUND
MILK
⅔ CUP · ⅓ PINT
6 SUCH PORTIONS TO THE QUART
PRUNES
3 LARGE · 1½ OUNCES
11 SUCH PORTIONS TO THE POUND
CARROTS
8 OUNCES
2 SUCH PORTIONS TO THE POUND
CHEESE
1½ CUBIC INCHES · ⅘ OUNCE
20 SUCH PORTIONS TO THE POUND
BREAD
1 THICK SLICE · 1⅓ OUNCES
12 SUCH PORTIONS TO THE POUND
BUTTER
1 CUBIC INCH · NEARLY ½ OUNCE
34 SUCH PORTIONS TO THE POUND
PEAS
½ CUP · 3½ OUNCES
2 SUCH PORTIONS TO THE POUND
OF UNSHELLED PEAS
MEDIUM FAT ROAST BEEF
1 SMALL SLICE · 1½ OUNCE
8 SUCH PORTIONS AND 2 HUNDRED CALORIE
PORTIONS OF COOKED-OUT FAT TO THE POUND, RAW
CANNED SALMON
½ CUP, SCANT · 2½ OUNCES
6 SUCH PORTIONS TO THE POUND
CANDY
3 SMALL PIECES · NEARLY 1 OUNCE
18 SUCH PORTIONS TO THE POUND
BOILED RICE
¾ CUP · 4 OUNCES
16 SUCH PORTIONS TO THE POUND, RAW
EGGS
1⅓ MEDIUM · 2½ OUNCES
9 SUCH PORTIONS TO THE DOZEN
CREAM
¼ CUP · 2 OUNCES
8 SUCH PORTIONS TO THE PINT
LOAF SUGAR
5 HALF PIECES · NEARLY 1 OUNCE
18 SUCH PORTIONS TO THE POUND
TOMATOES
ONE POUND
GRANULATED SUGAR
1¾ LEVEL TABLESPOONS · NEARLY 1 OUNCE
18 SUCH PORTIONS TO THE POUND
COOKED BACON
2 SMALL SLICES · ¾ OUNCE
16 SUCH PORTIONS AND 9 HUNDRED CALORIE
PORTIONS OF FRIED-OUT FAT TO THE POUND, RAW
ESTIMATES BASED ON AVERAGE FOOD VALUES
BUREAU OF HOME ECONOMICS
UNITED STATES DEPARTMENT OF AGRICULTURE

WHILE Food and Health Education specializes in original subject matter; that is, material prepared expressly for itself, the accompanying chart recently issued by the bureau of home economics, United States Department of Agriculture is so suggestive and likely to prove of such diversified service to the class room that we are, by permission, reproducing it for our readers.

Much of the work was done by Caroline L. Hunt who needs no introduction.

In discussing the chart Miss Hunt said to the editor that while Dr. Stanley, chief of the bureau, feels that future material based on average portions may be needed to complete the service, nevertheless she and members of the bureau staff are hopeful that the chart in its present form may prove helpful.

Any one who has labored to translate a tabulation of 100 calorie portions into terms of human interest and class room workableness will welcome such a graphic presentation. To the clever teacher numerous possibilities for adapting the material will at once occur.

Framed entire it is a helpful wall chart. Continuing the series to include other foods, clipping and pasting each illustration on a suitable card would give the nucleus for an illustrated card catalogue of energy values.

Teachers who are put to it to find sufficient material for their eager poster makers may make endless series of posters with Miss Hunt's carefully worked out calculations as the starting point. Classes in meal planning may cut and group and paste the individual illustrations in such manner as to achieve unusual effects. Students in fine arts classes might make suggestions as to coloring the chart as a whole or individual portions.

Makers of individual dietaries might like to hang out their banners on the outer walls of the class room, in the shape of graphic representations of their own particular meal plans.

Directors of food study courses would perhaps find it helpful to contrive original illustrations for a "Book of Marketing," the clipped designs being pasted on loose leaves and bound together.

Nutrition workers doing field work among the "submerged tenth" would find an illustrated book of great help, and the illustrations clipped from the chart and grouped to show under-nourished Mary or rachitic Tom just what he ought to eat would be certain to make a hit.

These are but suggestions. The chart itself will do the rest!

More Milk Fairies

Some newcomers among the milk fairies are the Wisconsin milk fairies, five in number, presented in a special bulletin issued by the agricultural extension service of the College of Agriculture, University of Wisconsin. Minnie Minerals, Polly Protein, Sally Sugar, Fannie Fat, and Viola Vitamins, are the names of these industrious fairies who are illustrated with the materials and tools with which they build big boys and girls.

Books For The Domestic Science Teacher

Include With Your Subscription an Order for One or More of These Books

THE BOSTON COOKING SCHOOL COOK BOOK

By Fannie Merritt Farmer. Price $2.50

(New Edition, Revised and Enlarged)

An authoritative guide to the study and practice of cookery. The material is so well organized and the recipes so accurate that the teacher of cookery may use the book as the very foundation stone of her library.

MARKETING AND HOUSEWORK MANUAL

By S. Agnes Donham. Price $2.00

The author's unusual breadth of experience as one of the house directors of the Garland School gives her just the right background for the preparation of a handbook that is entirely practical and suggestive.

FEEDING THE FAMILY

By Mary Swartz Rose, Ph.D. Price $2.40

Professor Rose's book has stood the test of several years' service. The subject matter is based on sound scientific knowledge, the treatment is entirely informal and popular. Teachers of foods will find it invaluable in planning diets for family use.

FOODS AND HOUSEHOLD MANAGEMENT

By Helen Kinne and Anna B. Cooley. $1.40

A clearly written discussion of the relation of foods to the economics of the household. Of interest to all teachers.

PRINCIPLES OF HUMAN NUTRITION

By Whitman H. Jordan. Price $2.50

One of the best of the shorter books on nutrition. Enriched with many helpful tables of food values, thus appealing to the teacher who builds her professional library slowly.

RECIPES FOR INSTITUTION USE

Compiled by Chicago Dietetic Assn. $1.60

A collection, each recipe of which is vouched for by a well known dietitian. Teachers interested in the underlying principles that govern quantity cooking know this book.

HOME ECONOMICS IN THE ELEMENTARY AND SECONDARY SCHOOLS

By Agnes K. Hanna. Price $2.50

A text book for students in special methods courses in colleges and normal schools. The use of specific problems for which students see the need is the basis of the book.

THE ENCYCLOPEDIA OF FOOD

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Stories of the foods by which we live, how and where they grow and are marketed. Their comparative values and how best to use and enjoy them.

FOOD AND HEALTH EDUCATION

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The Value of Plain, Edible, Granulated Gelatine as a Dietary Factor

NOW that Science has fully established the great dietary value of edible gelatine, it is important to know that the maximum results are obtained only from plain, granulated gelatine, which combines so perfectly with natural fresh fruits or juices, as well as with vegetables, eggs, milk, chicken and meat in any prescribed diet.

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GELATINE

has for nearly half a century represented the highest standard of purity and uniformity in plain, edible gelatine.

Because of this, its colloidal action is most dependable in assisting the digestive processes, and furthermore, the growth-promoting amino acid—Lysine—is ever present to a high degree.

Here is a recipe that is not alone tempting to the invalid or convalescent, but is unusually beneficial as well:

Jellied Chicken Bouillon

(Individual)

Make a well seasoned stock from a young fowl, adding celery salt or chopped parsley if an additional flavor is desired.

Soak three-fourths teaspoonful KNOX Sparkling Gelatine in one tablespoonful cold water five minutes, and dissolve in one tablespoonful boiling water. Add to one-half cup hot chicken stock and chill. Beat slightly with a fork and serve in a bouillon cup.

> Note—If it is desired to serve this bouillon hot, add gelatine just the same, as it thickens it and gives more health value to the broth; besides making it easier to digest.

Write for These Free Books

Every Dietitian and domestic science authority should have a copy of the digest on the scientific investigation of the "Health Value of Gelatine." This, together with recipe books, will be sent upon request.

Charles B. Knox Gelatine Co.

111 Knox Ave., Johnstown, New York

Both packages contain the same Quality and Quantity of Sparkling Gelatine

Practical Dietetics

(Continued from page 530)

was made very light, usually consisting of coffee or milk, toast, fruit and cereal. The fruit was fresh when possible, and when the markets forbade, stewed prunes, figs or cranberries or baked apples were substituted. Hot cereal was served during the fall and winter, as oatmeal, cream of wheat and bran, or cornmeal mush, but during the warmer months the cold breakfast foods were served.

Lunches furnished the real problem. No girl could eat heartily at noon and do justice to a one o'clock class. The noon meal had to be light. Here were served many escalloped vegetables, hearty salads, the occasional hot bread, cocoa or milk, and queer though it may seem, seldom a dessert. Every girl craves sweets, so her "sugar tooth" was satisfied with cocoanut or marshmallows in the salad, cocoa or chocolate for a beverage, and raisin bread.

Dinners were simple, but combined the best of flavors; piquante sauce with plain old roast beef, pimento in the creamed potatoes or mint jelly to season the mutton. There was always a second vegetable or a salad. Desserts were not heavy, but merely a finish to the meal, since mince pie would tend to dull the absorption of chemistry formulas. A fruit jello topped with whipped cream was found to be three cents cheaper than date pudding or raspberry shortcake, though the latter two were not tabooed from the week's routine of dishes.

But the left overs! Here was where the real brain work came in, estimating the requirements of appetites as variable as those of young girls. Trouble was averted in the elasticity of menus. Monday's dinner was certain to call for ham roll, meat pie or salad, thus taking care of the Sunday left-overs. If there were no portions remaining, a few pounds of neck or shoulder meat could be inexpensively substituted. A great share of the financial success of any such undertaking depends upon the ability and willingness of the cook to save.

Richness of food was subordinated to tastiness. Never did a dish appear on the table that was not planned to whet the appetite. A sprig of parsley or carrot top, a dash of paprika, or a cup of head lettuce made simple "cabbage-an-apple" salad look like a Marie Antoinette dessert.

With a firm understanding of girls' appetites and an alert knowledge of marketing, this stewardess was able to feed her family, pay her help, $100 on the coal bill, and buy a new set of furniture at a cost of $285. While much of the saving in money was due to the system of buying through a wholesale commission house, the real success of the work was shown by the [illegible] and satisfaction of the girls in the house.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

43. **"To the Teachers of Home Economics and Dietetics."** A booklet showing the place of powdered milk in bread making.

44. **"Lamb — Eat It Often."** A recipe booklet issued by a large packing house with many suggestions for preparation and serving of lamb.

45. **"Wheat and Flour Primer."** An illustrated pamphlet on wheat and flour manufacture issued by a large milling company. Suitable for supplementary reading in schools.

46. **"Cold Storage."** A leaflet issued by well known meat packers showing uses and economics of refrigeration

47. **"Gems from Mammy's Southern Kitchen."** A pamphlet with 100 tested recipes, menus and food tables, featuring rolled oats.

48. **"The Story of the Bath."** A thirty-page pamphlet published at the suggestion of school superintendents, by a large soap manufacturing company. Of interest to teachers of food and health showing the relation of personal cleanliness to proper nutrition and bodily integrity.

49. **"Cream of Tartar Baking Powder."** Large wall chart, showing graphically the composition of this class of baking powder.

50. **"A Cook Book in Yiddish,"** featuring baking powder.

51. **"Ways to Save Eggs."** A cook book featuring baking powder.

52. **"Temperature Guide."** Accurate tabulation of proper temperatures for different cookery processes.

53. **"The School Lunch Box."** Illustrated leaflet giving attractive recipes.

54. **"Baking Powders, Classification and Ingredients"** Leaflet giving much scientific information on the composition of baking powders.

55. **"New Cook Book."** A new edition of a practical recipe book put out by a baking powder company.

56. **"Johnnie's Adventures With the Milkarpies"** Charmingly written booklet featuring value of milk.

57. **"An Interesting Experiment With Malnourished Children."** Reprint, showing good results of nutrition work on part of large condensed milk company.

58. **"Keeping Your Child Fit."** Menus for Little People, and the Adolescent Girl. Three pamphlets published by condensed milk company. Very attractively printed.

59. **"To Members of the Milkarpie Klub."** Folder, giving information about a health club for boys and girls. Published by a large condensed milk company.

60. **"The Famous Eagle" and "The First Milkarpies."** Two leaflets with educational fairy stories. Published by a condensed milk company.

61. **"Bread and Its Ingredients."** Pamphlet giving carefully prepared information on wheat, flour, milling, yeast and the finished bread. Illustrated. Valuable for supplementary class room reading. Published by a well-known yeast manufacturer.

62. **"All About Milk."** Pamphlet by Milton J. Rosenau, M D., Professor of Preventive Medicine and Hygiene, Harvard University. Information about the production, distribution and consumption of milk. Published by a large life insurance company.

63. **"Metropolitan Cook Book."** Sixty-page booklet containing helpful recipes and suggestions for selecting proper food. Published by a life insurance company.

64. **"Metropolitan Mother Goose."** Attractive adaptation of Mother Goose melodies to modern health teaching. Also published on illuminated post cards.

65. **"How to Live Long,"** by Irving Fisher. Illustrated pamphlet, published by life insurance company. Gives fifteen rules for good health.

66. **"Clean Teeth Songs."** Illustrated sheet music, containing health songs for children. Published by manufacturer of toilet accessories.

67. **"Instructions for the Home Care of the Mouth."** Leaflet published by manufacturer. Helpfully illustrated.

68. Two attractive **"cut-outs,"** graphically illustrating the proper method of brushing the teeth.

69. **"Looking Inside a Health Tooth."** Folded model of tooth, showing structure and first steps in decay. Published by manufacturer of dentifrice.

70. **"The Little Gingerbread Man," "Cakes for Delicious Desserts," "Camp Cookery."** The first booklet is attractively illustrated in color, with rhymes and recipes for pastries. The other booklet and folder give recipes for the amateur cook and professional. Valuable for home or school use. Issued by a large baking powder company.

71. **"Pure Rich Milk Made More Digestible," "Milk for the Baby," "Pure Whole Milk—Concentrated," "Germ-Free Milk for Infants," "Safe, Wholesome Food for Every Member of the Family," "Milk at Its Best for Everybody," "How Evaporated Milk Is Prepared," "Recipes."** Six pamphlets and three cards. Showing prophylactic methods employed in the preparation of concentrated milk, recipes for its use, and a formula for the household. Also a cut-out illustrating in color the use of evaporated milk for picnic lunches.

72. **"The Facts About Vitovim Bread," "The Startling Story of the Super Loaf."** Two interestingly written pamphlets on the value of vitamins in the diet and their incorporation in bread. Issued by a large baking company.

73. **"Across Seven Seas," "About Tapioca."** Two illustrated leaflets and a colorful chart setting forth the history, cultivation and value of tapioca, directions for its use and well arranged recipes.

74. **"Recipes for Making Perfect Jams, Jellies and Marmalades," "Jams Made from Fresh Fruit," "Ann Proctor's Jam and Jelly Bulletin," "A Sight-Seeing Trip."** A bulletin and three folders dealing comprehensively with a process for making fruit syrups "jell," outlining the actual experiences of experts.

75. **"Modern Methods of Cooking," "Baking Powder Recipes," "Cake Recipes," "A Complete Cook Book."** The latter merits its name and should prove useful both in the school and the home. The three folders give general information regarding the use of baking powder, tables of proportions and recipes. All are written in a clear and instructive manner. Issued by the home economics department of a large baking powder company.

76. **"The Little Red Devil Recipes," "Simplifry Codfish Cakes."** A booklet and one page leaflet. The former gives appetizing recipes for the use of deviled ham and tongue, the origin and value of such products. The latter pictures "ready to cook" codfish cakes as an available dish.

77. **"The Story of a Prize Cup of Coffee."** An illustrated fairy story in booklet form, all about a king who, next to his beautiful daughter, loved a good cup of coffee. An appealing object lesson demonstrating the value of a self sealing wax paper as a coffee carton.

78. **"A Wholesome Tonic."** A folder illustrating the use of an acid phosphate both as a flavoring for cooling drinks and a tonic. Recipes are given. A pleasant way of adding phosphates to the diet. Published by a large baking powder company.

79. **"Made Dishes, Salads and Savories," "Cream Salad Mustard."** Several folders and two leaflets telling all about mustard, with comprehensive recipes. Useful for picnic parties and the home.

80. **"A Calendar of Dinners," "The Whys of Cooking," "Balanced Daily Diet," "Recipes for Everyday."** Four books by domestic science authorities giving well planned recipes and valuable material dealing with diet needs. A cooking fat is recommended for general use, and its food qualities demonstrated.

81. **"New and Delicious Ways of Preparing Pork and Beans," "About Peanuts and Peanut Butter," "About Macaroni."** Ten folders and a series of bulletins showing sanitary methods of preparing these and other products. Recipes and menus are supplied, pictured in color, and efficient ways of cooking and serving are stressed. General information is also given in regard to the derivation of these foods and their place in the diet. A series of exhibits shows some of the steps in the manufacture of peanut butter and macaroni, as follows: Spanish Peanuts; Virginia Peanuts; Stones Sorted from Peanuts; Outer Skin of Peanuts Removed; Acrid Hearts Removed from Peanuts; Peanut Butter; Durum Wheat Semolina used in the manufacture of Macaroni Products; Carton in Which Macaroni is Finally Packed.

82. **"The Adventurous Billy and Betty."** Attractive booklet with stories and jingles for children. Price 50 cents.

83. **"What To Serve and How To Serve It."** An attractive booklet prepared by an expert for a large food products company. A practical talk on food values is followed by menus and recipes with good illustrations.

"Good Pies
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84. **"Dates."** Interesting booklet with attractive illustrations telling of the history, botany and food value of dates. Valuable for use in food study classes.

85. **"Milk."** Small booklet giving valuable information concerning milk. Prepared by the educational department of a large milk products company. Price 25 cents.

86. **"A Monograph on Muffins."** Carefully prepared recipes and suggestions for muffins. Published by a large baking powder company.

87. **"Important Facts About Peanut Butter."** A description with illustrations of the process of manufacturing peanut butter.

88. **"Recipes of Flavor."** Sixty-three pages of suggestions for the use of canned fruits and vegetables. Prepared by the domestic science department of a food products company.

89. **"Story of Spices."** Valuable information about spices given in question and answer form for use by the domestic science teacher. Published by a manufacturer.

90. **"Story of Extracts."** Small booklet published by food products company giving important facts about extracts in question and answer form.

91. **"Story of Tea."** Questions answered about tea. Published by a manufacturer for use in food study classes.

92. **"The Story of Minute Tapioca."** An illustrated booklet telling the story of this food from the tropics to the table. Prepared by a manufacturing company.

93. **"Cook Book."** Featuring tapioca recipes. An attractive little book which has been approved by food experts.

94. **"Exhibit Chart."** For the domestic science class room. A colored chart illustrating the preparation of tapioca.

MATERIAL PUBLISHED BY GOVERNMENTAL AND EDUCATIONAL ASSOCIATIONS

"Course of Study and Syllabus in Cooking." Helpful outline of course as adopted by the board of education and school superintendents of the City of New York. Of interest to all teachers of home economics in secondary and high schools.

"A Suggestive Budget for Families of Small Income." Very stimulating discussion of the problem of teaching the family budget. Prepared by the Home Economics Committee of the Associated Charities, Cleveland.

"The Campaign Against Malnutrition." Public Health Bulletin No. 134. Issued by the Treasury Department, United States Public Health Service. Informing discussion of all phases of the problem of undernourishment. Prepared by Advisory Committee on Foods and Nutrition of the National Child Health Council in cooperation with the United States Public Health Service.

"Mother and Child." A magazine devoted to the discussion of health problems in the home. Good supplementary reading and suggestions for teachers. Published by the American Child Health Association, 17th and F Streets, Washington, D. C.

"Health from the Garden." A fine article on the needs of the family in regard to vegetables. By Louise M. Murphy, R. N., State Extension Agent, State Agricultural College, Lincoln, Nebraska. Published in "The Public Health Nurse," April, 1923, p. 167. 2157 Euclid Avenue, Cleveland, Ohio.

"Home Economics Education." By Henrietta W. Calvin. Bulletin No. 6, Bureau of Education, Department of the Interior, Washington, D. C. Copies at 5 cents each, from Superintendent of Documents, Government Printing Office, Washington, D. C. A discussion of teaching problems that is invaluable for all teachers in secondary and junior high schools.

"Outline for Health Poster Making in Schools." Prepared by the American Child Health Association. A four-page leaflet with suggestions and methods for teachers who are planning to have posters made in their classrooms.

"Milk And Its Uses In The Home." Farmers' Bulletin No. 1359, United States Department of Agriculture. A discussion of milk as a food from the point of view of the consumer. Valuable material for the home economics teacher.

"Status and Results of Home Demonstration Work." By Florence E. Ward, States Relations Service, United States Department of Agriculture. Department Circular No. 285.

"Vitamins, Health and the Daily Diet." Prepared by the Agricultural Experiment Station, University of Arkansas. A valuable publication for the purpose of acquainting the public with vitamins and other vital food factors.

The Soul of Bread

Flavor is to food what health is to the body.

Flavor in Bread is proof to the palate of genuine enjoyment and nourishment. Bread that is rich in flavor is rich in wholesome ingredients.

Yeast is the soul of Bread — and its chief source of flavor. Be sure it's FLEISCHMANN'S YEAST, for 52 years the Baker's choice.

THE FLEISCHMANN COMPANY

701 Washington Street **New York**

Fleischmann's Yeast *Fleischmann's Service*

Maltose in Sweet Potatoes

(Continued from page 519)

acid was determined by the method of Munson and Walker. Starch (together with dextrin insoluble in 95 per cent alcohol) was determined by heating the exhausted pulp with hydrochloric acid by the official method and estimating the reducing sugars formed.

A large proportion of the starch was digested, the percentage changing from 22.85 to 11.77 per cent. As a considerable proportion of dextrin was included with the starch, the actual quantity of starch is lower than indicated by analysis. The sucrose content did not change materially. A large increase in reducing sugars estimated as maltose—11.70 per cent—occurred. The increase in polarization calculated as maltose was 11.46 per cent. According to Browne[9], the normal weight of maltose, that is the amount of maltose which if dissolved in water and made up to 100 cc. would polarize at 100 degrees V. in a 2 decimeter tube is 12.506 g. Accordingly a solution containing 1 g. of maltose in 100 cc. will polarize at 8 degrees V. The increase in polarization observed—23.85 degrees corresponds to 2.98 g. per 100 cc. or to 2.98 x 100 divided by 26, or 11.46 per cent.

Sugar Formation During Baking

Three large typically shaped Nancy Hall potatoes were used. One was used for analysis in the raw state. Samples of tissue were cut from various portions, reduced to pulp in the sampling press and sugars determined in 10 g. samples by the method above described. The other two potatoes were each fitted with a thermometer reaching to the center of the potato. The baking was done in an electric baking oven previously heated to 200 degrees C. and maintained at this temperature during the baking. At the end of 23 minutes the temperatures recorded were 48 and 49 degrees C., respectively. At the end of an hour the temperatures were 92 and 94 degrees. At the end of 77 minutes the temperatures were 99 degrees and 100 degrees C., when the potatoes were removed and allowed to cool.

The raw potato used for analysis weighed 441 g. The two baked potatoes weighed 450 and 396.5 g. respectively, before baking, and 370 and 306 g. respectively, after baking and cooling. None of the tissues became carbonized. Each baked potato was ground for analysis by passing it through a meat chopper, and ten gram samples then taken. The sugars were extracted by the alcohol exhaustion method already described. The analyses of the baked potatoes are given both in terms of the sample as analyzed and calculated to the basis of the original weight before baking. The results are shown in Table 1. The sucrose content remained substantially unchanged. A very large increase in percentage of reducing sugar reckoned as maltose occurred, amounting to 15.8 and 13.17 respectively. These values agree fairly well with the figures for the increase in the percentage of maltose determined by polarization, 17.20 and 13.3 respectively.

Sugar Formation During Cookiing

One kilogram of pared Southern Queen potatoes consisting of three large roots, was covered with water in a sauce pan and heated. Nine minutes were required for the water surrounding the potatoes to come to the boiling point. They were boiled for an hour and a half, replacing the water which evaporated from time to time with fresh portions of boiling water, thus keeping them covered at all times. The water and potatoes were then mashed together to form a smooth pulp and weighed. Samples weighing 45.77 g. corresponding to 26 g. of the original potato were taken and reducing sugar determined by the methods described above.

Another lot of cooked potatoes was prepared at the same time by washing and paring three large potatoes and slicing from 1/8 to 1/4 inch thick in a slicing machine. One kilogram of the slices was used. They were cooked by dropping them one by one into boiling water in a sauce pan, kept boiling while the slices were being added. Four minutes were required for adding the slices. They were then boiled for an hour and a half. The cooked slices were reduced to pulp in the water in which they were cooked, weighed, sampled and analyzed, the sample weight used being 54.34 g., corresponding to 26 g. of the original potatoes. The results are shown in Table 1.

The potatoes cooked whole contained 15.02 per cent of reducing sugar calculated as maltose. But half as much reducing sugar, 7.51 per cent, was found in the cooked sliced potato. The higher sugar content in the potatoes ccoked whole can be ascribed to the fact that the potato tissues were kept for longer periods within the temperatures at which the diastase was active than in case of the sliced potato dropped into boiling water. The most striking feature, however, is the formation of so large an amount of reducing sugar during the few moments required to heat the slices as they were added to the boiling water. Thus 7.51 per cent of reducing sugar as maltose was found in the cooked slices, but 0.23 per cent being present in the raw potato before cooking. There remained the possibility, however, that more or less sugar formation might have occurred during the boiling period. Accordingly the experiments described below were made.

Southern Queen sweet potatoes were cut into small cubes and 10 gram samples heated for 5 and 60 minute periods respectively in boiling water. The cubes were prepared in a slicing machine and were approximately 3/16 inch in each dimension. Determination of the sugars present in the raw cubes was made by finely crushing 10 g. samples in a portion of water with a little alcohol, washing into a beaker and boiling with alcohol, throwing on a suction filter and thoroughly exhausting the residue by returning it to the beaker and boiling with alcohol, again filtering and repeating the exhaustion of the potatoes. The alcohol extracts were combined and the determination finished as already described, the dealcoholized solutions being diluted to 100 c.c. for polarization.

In the heating tests, 10 g. samples of the cubes were transferred to 400 cc. beakers. Each portion was then treated with 50 cc. of boiling water, set immediately on a burner and quickly heated to boiling, from 50 seconds to 1 minute being required. The boiling was then continued for 4 minutes longer in case of one test. In the other the total heating period was an hour, during which time the volume of water was kept nearly constant by the occasional addition of boiling water. At the end of the heating period 2 volumes of 95 per cent alcohol were added to each beaker, the liquid decanted off and the cubes transferred to a mortar and finely crushed. Liquid and pulp were then returned to the beaker, boiled, the liquid filtered off and the pulp extracted twice by boiling with alcohol. The extracts were collected, evaporated, and sugars determined by methods already described. The raw potatoes contained .34 per cent of reducing sugar calculated as maltose, the cubes cooked for 5 minutes in boiling water contained 8.32 per cent and the cubes cooked for one hour 7.82 per cent. Thus no sugar formation occurred at the boiling point. The experiment again demonstrated the extremely rapid saccharification which occurs when sweet potato tissue is heated through the temperature range at which the diastase acts.

Sugar Formation During Instantaneous Heating

Very small cubes, about 1/8 inch in each dimension, of Nancy Hall potato were prepared. Sugar was determined in ten gram portions of the raw cubes by crushing in a mortar in alcohol, and completing the determination in the manner already described. Two heating tests were made. In one, a ten gram portion was added to 25 cc. of boiling water contained in a beaker, set over a burner and strongly heated. Thirty seconds were required for the resumption of boiling after the 10 g. portion had been added. The boiling was continued for 30 seconds longer, when the contents of the beaker were transferred to a mortar and 50 cc. of 95 per cent alcohol added. The cubes were then crushed, the sugars extracted and estimated as previously described. In the other, a portion of the fresh cubes was forced through the Herles press. Ten grams of the resulting pulp were mixed with 25 cc. of water and slowly poured with constant stirring into a beaker containing 50 cc. of actively boiling water. Two volumes of 95 per cent alcohol were then added. The sugars were then extracted and estimated in the usual manner, the polarizations, only being determined.

The results are shown below. During the heat treatment lasting for 1 minute, 3.2 per cent of reducing sugar calculated as maltose formed in the potato tissue. When the rate of heating to boiling was increased still further by adding the suspended pulp slowly to actively boiling water, but 0.56 per cent of reducing sugar similarly calculated was formed.

Preparation of Crystalline Maltose

Three carefully washed and trimmed Nancy Hall sweet potatoes weighing 1,000 g. were baked for an hour and a quarter in an electric baking oven at about 200 deg. C. They were then removed and allowed to cool. They then weighed 781 g. They were reduced to pulp and 200 g. exhausted with four successive portions of alcohol. In making the first extraction, 1,000 cc. of 95 per cent alcohol were used. Five hundred cc. of 90 per cent alcohol were used in each of the three subsequent extractions. In making each extraction the alcohol and pulp were digested in the steam bath under a return condenser for an hour, allowed to cool and then filtered on a Buchner funnel with suction. Each extract was evaporated to a thin sirup, transferred to a crystallizing dish and allowed to stand with occasional stirring in a desiccator over sulfuric acid. Ten days later a very fine white crystalline deposit had formed in the second extract. It slowly increased in amount during the next two days when it was filtered off with suction, and the crystals, after sucking as free from mother liquor as possible, washed on the filter with alcohol until the washings were colorless. They were then spread out on a watch glass, and dried to constant weight over sulfuric acid. The filtrate and washings were evaporated to a thin sirup and placed over sulfuric acid. During the next few days another crop of crystals gradually formed. This was recovered as above described.

Crystals began to separate from the first extract 16 days from the time it was placed in the desiccator and slowly increased in quantity until 3 days later when the crop was filtered off, washed, and dried as described above. The third and fourth extracts were similarly treated. The filtrates and washings from these three extracts were combined, evaporated to a thin sirup and another crop of crystals subsequently recovered.

The total weights of crystals obtained from the 200 g. portion of baked sweet potato and the specific rotary power of each of the crops is given below.

Description	Weight	Specific Rotatory Power*
From first extract	5.437	130.3
From second extract	1.451	131.4
From third extract	.831	130.2
From fourth extract ...	1.172	108.6
From mother liquor of second extract	.282	128.5
From mother liquor of remaining extracts ...	3.999	97.9

*Determined in a micro-polariscope tube, 1 dec. long, the solutions being heated to the boiling point to destroy mutarotation and cooled before making up to the final weights.

Thus 8.59 per cent by weight of the baked sweet potato was recovered in the form of crude crystalline maltose, equal to 6.71 per cent of the weight of the fresh potatoes taken.

The reducing power of crystals from the first extract was determined by the Munson and Walker method; two 200 mg. portions gave 0.2397 and 0.2401 g. of cuprous oxide, respectively, corresponding to crystalline maltose of purity 98.8 and 99.0 per cent.

The maltose was recrystallized from alcohol and compared by Edgar T. Wherry of this bureau with a sample of pure maltose made by O. S. Keener of this bureau from starch. The refractive indices determined by the oil immersion method and other indications were found to be identical, the indices being as follows: Alpha axis —1.515. Gamma axis—1.550.

Summary

The presence of maltose in cooked sweet potatoes is shown by the agreement of the quantity of sugars determined by copper reduction with the quantities measured by polarization and by its isolation in crystalline form.

Sugar is not formed at the boiling point. It is formed very rapidly, although not instantaneously, during the initial stages of the digestive action.

[1] W. E. Stone, Zur Kenntnies der Kohlenhydrate der Susskartoffel (Batatas edulis), Ber. d. d. chem. Ges. 23 (1890), 1406.

[2] H. C. Gore, Occurrence of Diastase in the Sweet Potato in Relation to the Preparation of Sweet Potato Sirup. J. Biol. Chem., 44 (1920), 19.

[3] H. C. Gore, Preparation of Sweet Potato Sirup. Chem. Age., 29 (1921).

[4] C. A. Magoon and C. W. Culpepper. A Study of Sweet Potato Varieties with Special Reference to Their Canning Qualities. U. S. Dept. Agr. Bull. 1041 (1922).

[5] Gore, Reese, and Reed. U. S. Dept. Agr. Bull 1158 (1923).

[6] Gore, loc. cit. (J. Biol. Chem.).

[7] Thanks are due to J. H. Beattie of the Office of Horticulture and Pomology of this Department for the generous supplies of typically cured sweet potatoes used in this work and in all of the subsequent experiments.

[8] A similar press is described by W. Blair Clark in J. Ind. Eng. Chem. 9 (1917), 788.

[9] C. A. Browne — Handbook of Sugar Analysis, 1912, p. 197.

An Investigation of Oyster Spoilage

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Editor's Note—The tabulated results of the experiments upon which this article is based may be secured from the AMERICAN FOOD JOURNAL.

THE fact that oysters and other shellfish are extremely perishable food products, which decompose rapidly when removed from the shell and when held under conditions unfavorable for extended storage, has made it desirable to study the nature of the decomposition and the agents causing it. The experiments reported in this paper were conducted to demonstrate whether or not a determination of the hydrogen-ion concentration (acidity) could be used to supplement the examination of odor and appearance in detecting stale and sour or putrid oysters and whether there is any relation between these factors and the total numbers of bacteria present.[1]

Although the literature regarding the bacteriology and the chemistry of oysters is rather extensive, the former deals almost entirely with the sanitary quality of the shellfish and the latter with moisture, salt, and ash determinations in connection with the adulteration of oysters by soaking in fresh water. Considerable work has been reported, notably by Mitchell[2], regarding the glycogen content of oysters. A rather complete survey of the literature on oysters has failed to show that anything has been published concerning the nature of oyster spoilage.

Recognizing the perishable nature of this product and the fact that it is often necessary to transport shucked oysters for long distances from the coast, it is of interest to investigate the spoilage which takes place in the oysters under different methods of preparation and storage. The experiments reported herein are only preliminary to a more extensive investigation of oyster spoilage which is being conducted, the results of which will be reported later.

All the oysters used in these experiments were obtained as shell stock from the Potomac River. The raw material was purposely limited to oysters from this locality in order that we might restrict our conclusions to oysters from one region. Further work is planned in which shellfish from other localities will be used.

A quantity of shell oysters sufficient for the experiment was transported to the laboratory and divided into two lots. The shells of the oysters in one lot were scrubbed thoroughly with a stiff brush under running water. The shells of the other lot were left unwashed. The oysters in both lots were then shucked in their own liquor. After shucking, the oysters in each lot were divided into three small batches. One batch of oysters from washed shells and one batch from unwashed shells were stored in their own liquor without washing. One batch from washed shells and one batch from unwashed shells were drained, washed in a colander in running fresh water for a few minutes, allowed to stand in a pan of fresh water for ten minutes, drained and stored. The remaining batch from each lot of shell oysters was drained, washed in a colander in running fresh water for a few minutes, allowed to stand in a pan of 2.5 per cent salt solution for ten minutes, drained, and stored.

In the first experiment the oysters were transferred to sterile glass jars and were stored in a large wooden box filled with crushed ice. The ice was replenished each day. This was to simulate actual shipping conditions where the oysters are transported in containers immersed in crushed ice within wooden boxes. In the second and fourth experiments, after the oysters had been transferred to the jars, they were stored at room temperature without any ice. In the third experiment the oysters in jars were iced on the first day and ice was added only on alternate days thereafter.

After these four experiments had been completed and the results carefully studied, it was deemed advisable to perform certain other experiments to determine the possibility of autolysis or auto-digestion. Oysters from unwashed shells were stored in glass jars at room temperature and at 50 deg. C. To one batch of oysters which had been passed through a food chopper were added about two ounces of toloul. The same quantity of toloul was added to whole oysters in two other jars, one of which was held in the incubator at 50 deg. C. The oysters in the other jar were stored in their own liquor at room temperature without toloul. In all the experiments conducted a thermograph was placed with the oysters and held under the same conditions.

Method of Procedure

Before the period of storage began and at 24-hour intervals during the course of the spoilage the following data were obtained: the total aerobic count on dextrose agar at 30 deg. C.; the presence of anaerobic bacteria grown in dextrose agar cultures at 30 deg. C.; the yeast count on acidified wort agar plates at 30 deg. C.; the presence of lactose fermenting bacteria grown in lactose broth at 37 deg. C.; the hydrogen-ion concentration of the oyster liquor determined by the colorimetric method, using a spot-plate and the indicators of Clark and Lubs[3]; and the odor and appearance of the oysters. The aerobic count, the yeast count, and the lactose fermentation were determined on the oyster liquor and the oyster meats. Each experiment was terminated when by their odor and appearance the oysters were considered to be in an advanced stage of decomposition.

In determining the total aerobic count it was found that in those experiments in which ice was used, it frequently happened that the count on stale oysters might fall below the count actually obtained when the oysters were changing from good to stale. When no ice was used the bacterial count increased steadily day by day and there was no decrease during the stale stage or the sour stage below the count obtained at the beginning of each stage. The use of ice introduced a disturbing factor, so that the bacterial count increased and decreased during the stale condition or the sour condition, making it impossible to determine the numbers of bacteria limiting each stage of decomposition. Owing to the difficulty in obtaining uniform and representative samples, the results from plating dilutions of oyster meats have been too variable to be of any significance.

A careful record was kept of the odor and appearance of the oysters in the 21 jars used in the four experiments. The oysters were judged to be stale when both the writers, examining them independently, agreed that the odor and appearance was such that the oysters were not normal and yet had not reached a stage of sourness of putrescence where they might be considered positively spoiled. It is recognized that such an examination is based solely on personal judgment, but with practice individuals accustomed to grading foods by the sense of smell have little difficulty in detecting the abnormal odors. There can be no question regarding the odor and appearance of the oysters designated as sour since they are usually gassy and have a sour nauseating odor.

It was found that there was no relation between the lactose broth fermentation or the yeast count and the stage or rate of decomposition. When oysters have reached a stage of sourness where the hydrogen-ion concentration is 5.0 or less, yeasts and acid-forming streptococci were found to predominate but the yeasts present in the fresh oysters were too few to be determined and probably had no significance in the spoilage of the oysters. For the purpose of determining the nature of the bacterial flora of decomposing oysters pure cultures were collected from the dextrose agar plates, from the anaerobic cultures and from the wort agar plates. These organisms are being studied with a view to typing or grouping them. The results of the work will be reported in a subsequent paper.

The Results

From the results several conclusions may be drawn. It is indicated that there is a more or less definite relation between the hydrogen-ion concentration of the oyster liquor and the odor and general appearance of the oysters. It has been found that the hydrogen-ion concentration, when once it has started to increase during the process of spoilage, does not fall back but rises steadily, regardless of the temperature and the variation in bacterial count.

The limiting hydrogen-ion concentration values are fairly definite and may be of some assistance in determining the quality of shucked oysters. The results obtained in these experiments indicate that hydrogen-ion concentration values between 5.6 and about 6.1 represent a zone wherein oysters are passing from good to stale. Oysters passing from stale to sour or putrid were found to have hydrogen-ion concentration values between 4.9 and about 5.3. Oysters having a hydrogen-ion concentration of less than 5.0 may be considered usually to be in an advanced stage of decomposition.

These results have been generally confirmed by observations made of shucked oysters in New York obtained from sources other than the Potomac River. The limited number of experiments and the restricted area from which the oysters used were collected does not justify the unqualified statement that these hydrogen-ion concentration values may be applied to shucked oysters from all localities handled under all conditions. The results obtained in these experiments, however, have been constant enough to indicate that the hydrogen-ion concentrations given are significant and may be of value in examining shucked oysters of questionable quality.

The total numbers of bacteria growing on the aerobic plates, on the other hand, have been found to be of little value in determining the quality of the oysters. It is evident that good oysters may contain as many as 30,000,000 bacteria per c.c., while stale oysters may have an aerobic count as low as 12,000 bacteria per c.c. The various factors involved are such that the bacterial count is influenced tremendously. Oysters during hibernation contain fewer bacteria than when actively feeding. This is illustrated by the counts obtained in the fourth experiment which was conducted in April while the oysters were actively feeding as compared with the counts obtained in the other three experiments which were conducted during the winter when the oysters were in a state of hibernation. It is apparent from the results presented that the same hydrogen-ion concentration and physical condition can be obtained in oysters with both large and small counts of bacteria.

The failure of the bacterial counts to correlate with the odor and appearance and with the hydrogen-ion concentration of the oysters made it advisable to investigate the possibility that autolysis or auto-digestion might accompany bacterial spoilage of the oysters. The results of the experiments indicate that autolysis plays a minor part, if any, in producing the physical evidences of spoilage of oysters.

When enough toluol was added to restrict the growth of bacteria the decrease in hydrogen-ion concentration was correspondingly restricted. In Jar OS-25, which contained whole unwashed oysters and toluol, the hydrogen-ion concentration changed from 6.6 to 5.6, the latter concentration being attained on the third day and remaining unchanged until the termination of the experiment on the seventh day. In the same jar the bacterial count had increased to 500,000 per c.c. in spite of the toluol. In Jar OS-26, containing chopped oysters and toluol, the hydrogen-ion concentration changed from 6.4 to 6.0. This value was obtained on the last six days of the experiment. The bacterial count in this jar reached a maximum of 5,000 per c.c.

In Jar OS-27, containing whole unwashed oysters with toluol stored at 50 deg. C., the hydrogen-ion concentration also changed from 6.6 to 6.0, while the maximum count was 2,300 per c.c. In this jar the oysters were partly digested, indicating that under some conditions autolysis may play a part, not in the rotting of oysters but in softening or digesting them. In the control jar of oysters, OS-28, containing whole unwashed oysters without toluol the hydrogen-ion concentration changed from 6.8 to 4.4 while the maximum count was 2,270,000,000 per c.c.

Some Conclusions

After consideration of the data, the natural conclusion is that the spoilage of oysters is dependent on the presence and development of certain types or groups of bacteria rather than upon the total numbers of organisms present. It is evident that the total aerobic count of bacteria is not as significant in judging the quality of shucked oysters as might be the numbers of bacteria of certain groups or species which ferment or putrefy the oysters. The bacteria responsible for the spoilage may be anaerobic or they may be the aerobic forms capable of fermenting the carbohydrate available in oysters. This matter is being investigated and will be reported later. It is well-known that oysters contain glycogen in variable amounts, depending upon the food supply of the oyster, the season of the year, and some other factors (Mitchell[4], Beilstein[5]). Mitchell[4] has also stated that, with the circulation destroyed, death coming on in the tissues, and metabolism coming to a stop, the hydrolytic process of glycogenolysis is known to take place in dying animal tissues. This process would make available to the bacteria maltose and probably dextrose.

Browne[6] has stated that glycogen is decomposed by certain bacteria and other organisms but is not fermented by yeasts. When the acid-producing organisms causing spoilage of oysters are identified a method for making a differential count to determine the numbers of these bacteria will probably be of value in supplementing the organoleptic examination and the determination of the hydrogen-ion contration.

Regarding the washing of oysters before and after shucking, it is not apparent that this treatment has any appreciable effect upon the keeping quality of the oysters. The data presented indicate that the oysters became stale or sour on about the same day, regardless of the method of washing employed. The use of ice, however, is very important in the handling of shucked oysters. In the first experiment where ice was used constantly, the oysters developed an abnormal odor on the third and fourth days but remained in this condition until the tenth, twelfth, and fourteenth days. In this experiment the oysters did not, in the late stages of decomposition, develop the characteristic sour odor and gassy appearance of badly decomposed oysters but rather developed a strong, rank, disagreeable odor, and a milky appearance.

In the experiments where no ice was used the oysters changed very rapidly from normal to a condition described as stale and within three or four days after shucking to a sour-smelling, nauseating, gassy, and milky appearing condition which is unmistakable and characteristic of spoiled oysters.

The use of ice on alternate days simply retarded temporarily the growth of the bacteria causing spoilage but the progress of the decomposition on the days when no ice was used was rapid enough so that the spoilage proceeded gradually regardless of the temperature. A condition of sourness was reached on the seventh or eighth day in this experiment.

If the growth of the bacteria causing spoilage is to be restricted and the oysters kept in an edible condition for a time sufficient for them to reach the markets farthest from the coast a liberal use of ice is necessary. The ice should be applied as soon as possible after shucking and should be replenished as often as necessary to keep the temperature at a point unfavorable to the growth of bacteria causing the spoilage.

Summary

The spoilage of shucked oysters held at various temperatures, with and without ice, is more or less definitely correlated with the hydrogen-ion concentration of the oyster liquor.

Hydrogen-ion concentration values are given for good, stale, and sour oysters obtained from the Potomac River, shucked, washed, and stored under different conditions.

Total aerobic counts of bacteria in the oyster liquor fail to correlate with the physical condition and hydrogen-ion concentration of the decomposing oysters.

Yeast counts, the numbers of lactose fermenting organisms, and the bacterial counts from the oyster meats are too variable to be of significance in determining the spoilage of oysters.

A determination of the numbers of certain types or species of bacteria responsible for the spoilage, and as yet unidentified, will probably be of assistance in judging the quality of shucked oysters.

Autolysis plays a part in softening or digesting the oysters.

The method of shucking and washing appears to have little effect on the keeping quality of the oysters, but a liberal use of ice during storage is necessary to deliver shucked oysters to distant markets in edible condition.

[1] This investigation was conducted under the supervision of Dr. Charles Thom to whom thanks are expressed for criticisms and suggestions.

[2] Mitchell, P. H., Bull. of Bureau of Fisheries, Vol. 35, No. 860, 3-3-15.

[3] Clark, W. M., and Lubs, H. A. Jour. Bact. II., 1917, 191-236.

[4] Mitchell, P. H. Bull. of Bur. of Fisheries, Vol. 35 No. 851, 8-11-17.

[5] Beilstein, F. Handbueh der Organische Chemie, Vol. 1, 1893, p. 1093.

[6] Browne, C. A. Handbook of sugar analysis. 1st. edition, 1912, p. 579.

The Chemistry of the Raisin

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During the years, from 1898 to 1920, the raisin industry has had a large and rapid growth. With exports increasing from 3,000,000 pounds with a value of $167,000 to 110,000,000 pounds with a value of more than $131,000,000, this country has stepped to the front in the industry. It is only within a comparatively short time that it was realized that the United States had the qualifications of soil and climate necessary for the world's largest raisin producer. California is the chief raisin producing state in the Union, in fact, practically the entire production of the country originates in the San Jonquin Valley in this state. Here, the process of turning the grape into the raisin has been greatly improved in recent years by the use of machinery for the curing, seeding, packing and distributing of the crop.

Many varieties of grapes, differing widely in physical properties, taste, size, shape and coloring matter are used in the production of raisins. The chemical composition of grapes varies according to the use to which they are to be put, the time of the year they are picked, the soil, the cultural operations, as well as climatic and general weather conditions. The chemical constituents of grapes usually considered are the water soluble portion including sugars, moisture, free acid, protein, pectin and ash; the non-soluble portion, including the seeds, shell or hull, pectose and ash. In the dry substance, the nitrogen and sugar content are of interest. In an average analysis, the chief constituents are found to be: moisture, 70-85 per cent, sugars, 9-23 per cent, free acid, 1 per cent and nitrogen 1 per cent.

A small variation in the chemical composition of grapes used for different purposes has been noted as in the following cases:

Grapes used for:

	Wine Making	Grape Juice	Raisins
Moisture	78.17	78.23	79.93
Sugar	14.36	16.15	21.33
Free acid	0.79	0.89	0.35
Nitrogen	0.47	.....	.....

The grapes used for the production of raisins are, considered as a whole, more moist and richer in sugar than those used for any other purpose.

Each individual variety of grape varies in taste, size, shape and chemical analysis during ripening. The sugar content increases up to the time of maturity and then drops off rapidly as decomposition or drying sets in. The acid content is largest in unripened grapes as might be suspected from their sour taste. This decreases as the grape ripens and even continues to decrease as decomposition sets in. Grapes can be collected for raisins from the middle of August until November. Some idea of the change in composition of grapes through this period may be gotten from the following table:

	moisture	sugar	free acid	soluble material
Aug.	73.88%	18.43%	0.95%	20.95%
Oct.	72.35	14.98	0.24	18.15

The relationship between the soil and the raisin has not as yet been definitely fixed, however, it has been found that a large increase in the phosphorous content of the stem and even of the grape itself, can be obtained from a phosphorous fertilizer. In the same way, the nitrogen content can be increased. The color of the soil seems to affect grapes in this peculiar way; grape vines growing in soils that are light in color, grow slower, produce grapes more quickly and of inferior quality; those in dark soils, grow faster but do not produce as soon, producing a superior grape. This may be due to a slightly higher temperature noted in sub-surface dark soils.

If cultural operations such as planting distances, thinning vines, direction of vines, removal of suckers, time and length of pruning, number of branches, are carried out carefully the grape will tend to improve.

Grapes can be collected for raisins from the middle of August until November. It takes about three weeks to cure mid-season raisins depending on the weather. Raisins which are collected earliest in the season can be cured in ten days, while those collected during the latter part of the season usually take a much longer period, as four weeks. The process of curing raisins is of this general order; the bunches are cut when the grapes are fairly ripe, about the middle of the season. They are placed in shallow trays about two feet by three feet and are put in the sun to dry. These raisins are turned from time to time by putting an empty tray on top of a full one and inverting. After the raisins are fairly dry, they are stored in a sweat box until they are packed and prepared for market. The curing process is completed usually by one division, the seeding, grading, packing and shipping are carried out by others. A great part of this work is done by machinery.

It is sometimes difficult to grasp the fact that the grape undergoes a total change on drying aside from losing its moisture. A quantity of grapes analyzed 5 per cent pure ash and 0.2 per cent nitrogen. These same grapes after drying for a period of two weeks at 100 degrees gave an analysis 2.3 per cent pure ash and 1 per cent nitrogen.

Chemical Composition

The chemical constituents found in the largest percentages in raisins are sugars, chiefly grape sugar, with very small traces of sucrose if any, varying between 60 and 70 per cent water, 25 to 35 per cent, nitrogen 1 per cent, wood fiber 2 per cent, ash 1 per cent, pectins, fats and oils 1 per cent. This analysis may vary considerably due to atmospheric conditions. In a very humid locality, the sugar content will be lower than in a dry locality because raisins absorb considerable quantity of moisture even when packed. A sample of raisins giving an analysis very similar to the above was dried very carefully at 65 deg. (to avoid any decomposition of sugars due to heat) and the sugar content was determined on the sample and found to be 80.5 per cent due to the loss in weight of the sample from drying.

From a number of samples of California raisins analyzed by the author, which included a number of varieties both seeded and seedless and covering the crops of three seasons, the following values were obtained:

Moisture, 32.28 per cent; ash, 1.50 per cent; sugar, 66.20 per cent; cellulose, 1.00 per cent; pectins, 0.85 per cent.

The sugar was in all cases found to be grape sugar with very small traces of sucrose, never was sucrose present in any quantities. Sugar was found in greater quantities in seedless raisins than in seeded raisins, but moisture and acid were found in larger quantities in seeded than in seedless. Otherwise, the analysis of seedless and seeded were very similar. Over half the ash or inorganic part of the raisin was composed of potassium salts, approximately one-tenth phosphates and another tenth lime, the remainder being made up of chlorides and oxides of magnesium, sodium and iron, together with some sulphur.

There are two by-products of the raisin industry, the stems and the seeds. The stems are of small value as they are for the most part fiber, although one-fifth of their weight is moisture, one-fifth sugar, and sometimes as much as one-tenth is tannin.

There are from three to five seeds in a normal grape and one to two seeds in a normal raisin. About three to four thousand tons of raisin seeds are a total loss yearly to the state of California alone. Where and how they can be put to use to the best advantage, the future can only tell. It has been found that excepting seedless raisins, the sugar and acid content of the raisin increases with the number of seeds, the acid content increasing more rapidly than the sugar content. The general form of the berry is also influenced by the number of seeds, a berry containing more seeds than the average will tend toward the oval shape, while one whose seed content is below the average, will be almost round in shape. Air dried raisin seeds give the following analysis:

Moisture, 10 per cent; ash, carbohydrate, 20 per cent; N fat, 15 per cent; fiber, 40 per cent; protein, 15 per cent.

There are three chief products from raisin seeds; the sirup, the oil, and the meal (fiber and protein). The sirup, is a clear, sweet tasting liquid, being rich in grape sugar. It has been said that the fermentation of this sirup, alone would produce about one hundred thousand gallons of industrial alcohol per year. The sirup, could undoubtedly be used as an adulterant of table sirups or in the production of confections, preserves, jellies, soft drinks or medicines. It might possibly be used as a filler for soap or leather or as a reducing agent in dye development.

The oil is a pale yellow color, has a slight but not unpleasant odor and a nut like taste. It is composed chiefly of the glycerides of linoleic and oleic acids. This oil is utilized in a number of ways in Italy, Germany and the Levant such as in the soap, paint or varnish industries. It can not be classified as a drying oil but rather lies between that class and the semi-drying oils. It might be used in setting olives, canning sardines, in oiling wool, furniture polish, leather dressing, ointments, salves or cosmetics. It might be bleached to produce cooking and salad oils, or be hydrolized to form synthetic lard, or further thickened to produce a rubber substitute.

The meal is composed of one-seventh protein and one-half crude fiber. The high protein value makes it available for stock food and the nitrogen content makes it useful for a fertilizer. It is possible that a food coloring matter might be derived from this meal.

Before completing the analysis of raisins, another thought might be suggested. Raisins are found to contain over one-half their weight in the form of dextrose, which is the form in which most of the carbohydrate material of the food comes ultimately into the service of the body tissues. Furthermore, over one-half the energy manifested in the human body is derived from the oxidation of glucose and glycogen which on hydrolysis yield glucose or dextrose. For these reasons we are justified in considering raisins as ideal predigested food.

THE NATION'S FOOD

(Continued from page 516)

in weight; 47 per cent in another place; 71 per cent in still another. Too much coffee, too little sleep, too much meat, or a breakfast of potato, gravy, and chocolate cake, as one kiddie reported —what wonder if the child gains but one or two pounds a year instead of his due four or five, or if from the same cause spring such various results as the pale listless mood of the child known within faculty meetings as a "repeater," or just the contrary—the over-ambition, restless activity of the "difficult" child?

Hardly less remarkable is the promptness of response to suitable feeding, together with correction of defective teeth or eyesight, when these and similar conditions are present. Seventy-one per cent of children in 18 Missouri schools gained one or two pounds after two months' attendance at nutrition clinics. In another place, the proportion of children having "perfect scores," or cards showing a certain gain in weight and general condition, rose from 6 to 22 per cent.

The interest in this simple yet fundamental procedure has brought more calls for help than the service has had personnel to heed. The surveys in Missouri meant cooperation of the State Tuberculosis Association, the Red Cross, extension service of the State University, the Parent Teachers Association, the W. C. T. U., medical and dental professions, superintendents of education and other school authorities. In one state the teachers themselves shared in the tests and examinations. Nutrition clinics, and classes in schools and in communities, make more effective and more lasting the interest aroused.

Finally, what is the central result of all these surveys? Is there a trustworthy standard by which the degree of nutrition can be estimated? How can one know whether a child is "fit" or not? Various answers to this have been suggested, various tables for measurements prepared. Of these the three most important were tested over one of the groups of children mentioned above, in the hope of reaching some uniformity, some practical "index" of physical fitness.

The 500 children were of native white parentage, without physical defect, and giving evidence of good nourishment, yet one-fifth were found under weight. In more detail—according to the Wood standard in height-weight-age tables most widely used in this country, 20 per cent of the children were at least 10 per cent underweight. Dreyer's rule, stem length and chest circumference measures, showed 13 per cent underweight. Pirquet's "pelidisi," expressed by the formula that in a normal child "the cube root of ten times the weight in grams divided by the sitting height in centimeters will equal 100," showed 17 per cent attaining but 94 or less and therefore underweight.

The test brings nearer the desired approach to an agreed standard, no doubt; it brings straight home the fact that though these children were apparently the best specimens of health to be found, yet one-fifth were still under weight according to the prevailing standard used in school work in this country.

All this is but an introduction to stories of scientific work in conditions of today, in the modern public health program for human well being. They show the inner meaning of much that is taken for granted. They are needed in homes. They can be used to give a sense of dignity and control in the most ordinary acts of the ch. to vivify history, civics, geography, and living, even the "eats."

Spice Grinders Meet

THE spice grinders section of the American Spice Trade Association held their semi-annual meeting at the Congress Hotel, Chicago, October 10. The meeting was largely attended and an interesting program was presented. Among the subjects discussed were the following: "An Association Service Bureau," "Simplified Spice Containers," "Slack-filled Packages and State Legislation," "Price Competition vs. Salesmanship."

Protect the children!

THE sturdy youngsters and tiny toddlers whose trusting fingers are twined about your very heartstrings play always under the threatening shadow of tuberculosis.

The dread disease is everywhere. Wealth is no bar and position no barrier to consumption. The only way to make the world safe for children is to stamp out tuberculosis entirely.

It can be stamped out. Today only one person dies of tuberculosis where two died before. Christmas Seals have helped to save the other life.

Help in this life-saving campaign. Save the children. Buy Christmas Seals.

Stamp out Tuberculosis with Christmas Seals

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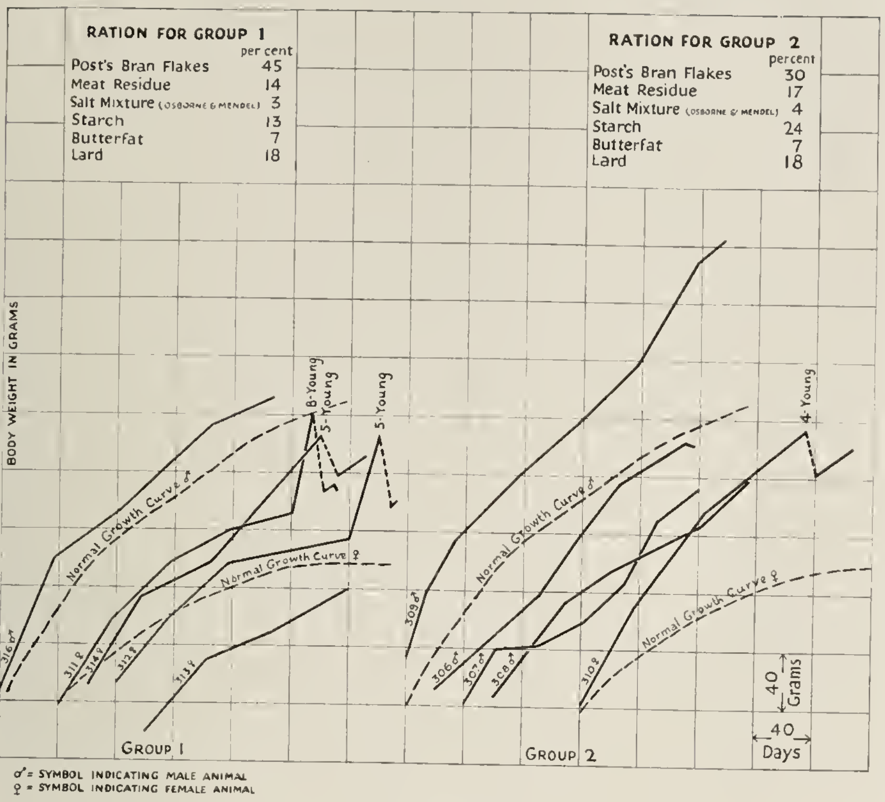

Chart V

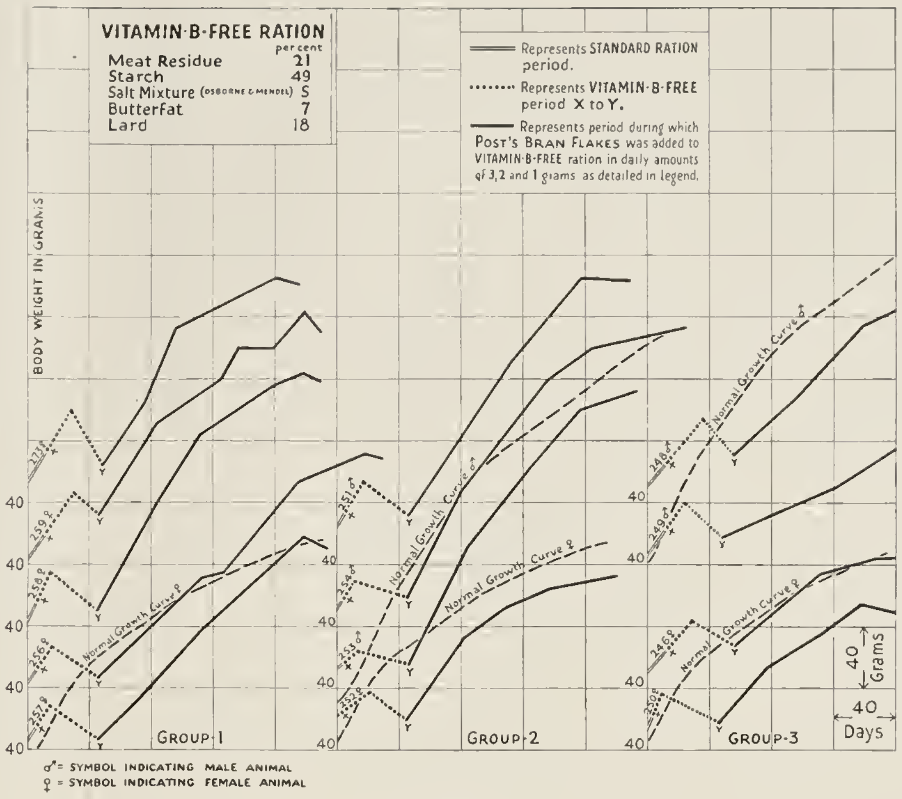

Chart VI

Value of Cereals

(Continued from page 512)

vitamin B. This means that all other ingredients of the diet must be tested to ensure their freedom from vitamin B. To do this, several series of "control" experiments were conducted in which were fed a mixture of all the ingredients of the diet other than the substance under test. In such "controls" an equivalent weight of starch was substituted for Grape-Nuts or Post's Bran Flakes. Invariably growth failure or severe growth decline ensued. Growth was promptly resumed when a very small quantity of a substance known to be rich in vitamin B was fed. It is thus evident that the mixture of these ingredients, the "control ration," lacks vitamin B, and that vitamin B is the only deficiency. Hence any growth response obtained by the addition of Grape-Nuts or Post's Bran Flakes to such diets indicates the presence of vitamin B.

The legends accompanying each chart summarize briefly the results obtained.

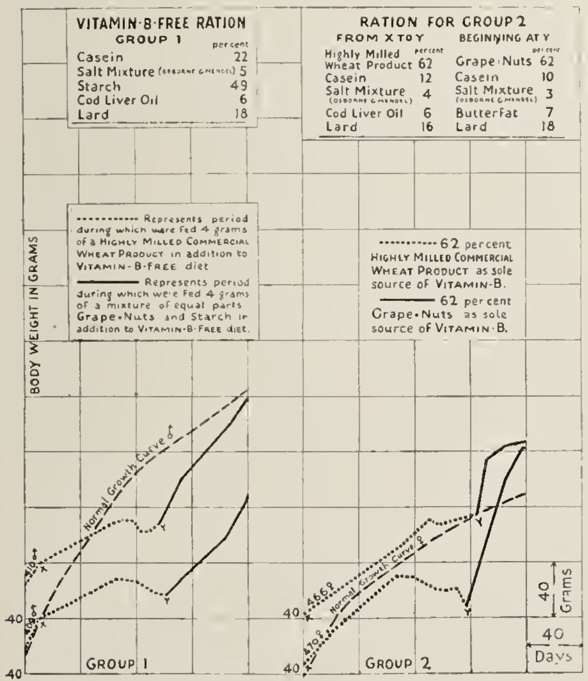

Chart VII

These may for convenience be reviewed here.

In the "preventive experiments," normal growth was secured on rations, the vitamin B of which was supplied solely by Grape-Nuts representing 62, 50, 45 and 30 per cent of the diet; and by Post's Bran Flakes representing 45 and 30 per cent of the diet. Good reproduction was obtained, as recorded in charts 1, 2 and 5. It is interesting to note that apparently the unknown dietary essential, "X," which Evans and Bishop find to be necessary for reproduction and to reside in certain natural food products, (e. g., green leaves, the cereals and fresh meat), is in evidence in Grape-Nuts and Post's Bran Flakes.

In the "curative" experiments, as little as one gram of Grape-Nuts or of Post's Bran Flakes produces definite response, and one to two grams enables animals to resume growth essentially in accordance with the normal curve. It is evident from charts 7 and 8, that as much as 4 grams of a typical highly milled commercial grain product does not suffice for growth.

The significance of these results may be further appreciated by noting the comparative vitamin B content of other common articles of diet. Thus for example Osborne and Mendel find that 15 grams of fresh milk,[8] 4 grams of whole egg,[9] 10.8 to 17.2 grams fresh celery stalks, 11 grams fresh lettuce,[10] are required to supply sufficient vitamin B for growth.

Such conclusive evidence of the presence of vitamin B in such large quantities in these cereal products is invaluable to the manufacturer not only because it adds to his scientific knowledge of the food value of his products but also as definite proof that this food value is not diminished during the present processes of manufacture.

Explanation of Charts

CHART 1, indicates that a ration containing 62 per cent of Grape-Nuts as the sole source of vitamin B enables animals to attain full growth, reproduce, and rear young; and the young (second generation) subsisting from the outset, upon the same ration, can attain full growth, and reproduce. Members of the third generation have all the appearances of normal growth.

CHART 2, indicates that a ration containing 50 per cent of Grape-Nuts as the sole source of vitamin B enables animals to attain full growth, reproduce and rear young; and the young subsisting from the outset upon the same ration, are growing in accordance with the normal growth curve.

CHART 3, indicates that rations containing 45 per cent (Group 1) or even 30 per cent (Group 2) of Grape-Nuts as the sole source of vitamin B may enable animals to attain good growth. In the case of animals 120 and 122, a 30 per cent Grape-Nuts ration was given from X to Y, followed by a 45 per cent ration at Y.

CHART 4, indicates that 1.5 to 3 grams of Grape-Nuts daily suffices as the sole source of vitamin B.

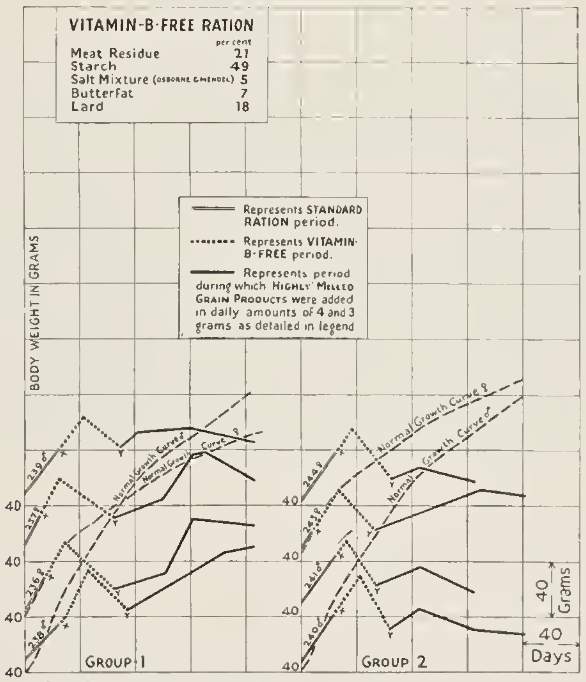

Chart VIII

Beginning at X, the vitamin B free diet alone was given until pronounced decline in weight ensued. At this stage various quantities of Grape-Nuts were added daily as follows:

Group 1. Beginning at Y, three grams Grape-Nuts.

Group 2. Beginning at Y, two grams Grape-Nuts.

In the case of animal 227 the vitamin B free diet had induced definite symptoms of polyneuritis which promptly disappeared following the feeding of Grape-Nuts.

Group 3. Beginning at Y, animals 376, 377, 378, were given one gram Grape-Nuts daily. At Z, this was raised to 1.5 grams. Animals 450 and 451 at Y, were given 1.5 grams Grape-Nuts. Subsequently in the case of 451, it was raised to two grams indicated at Z.

CHART 5, indicates that rations containing 45 per cent (Group 1) or even 30 per cent (Group 2) of Post's Bran Flakes as the sole source of vitamin B enables animals to attain good growth and reproduce.

CHART 6, indicates that 1 to 2 grams of Post's Bran Flakes daily suffices as the sole source of vitamin B.

Beginning at X, the vitamin B free diet alone was given until pronounced decline in weight ensued. At this stage various quantities of Post's Bran Flakes were added daily as follows:

Group 1. Beginning at Y, three grams Post's Bran Flakes. In the case of animals 257 and 258, the vitamin B free diet brought on marked polyneuritic symptoms which disappeared following the Post's Bran Flakes feeding.

Group 2. Beginning at Y, two grams Post's Bran Flakes.

Group 3. Beginning at Y, one gram Post's Bran Flakes.

CHART 7, indicates that even as much as four grams of a highly milled wheat product as a source of vitamin B is inadequate for growth.

In Groups 1 and 2, beginning at X, the vitamin B free diet alone was given until pronounced decline in weight ensued. At this point, Y, were fed daily four and three grams respectively of a highly milled wheat product.

CHART 8, further emphasizes the inadequacy of highly milled grains as a source of vitamin B.

In Group 1, four grams highly milled wheat product No. 2 were given daily from the outset (at X) along with the vitamin B free diet. At Y, a mixture of 2 grams Grape-Nuts and 2 grams starch were given daily in place of the four grams highly milled product. The prompt resumption of growth is significant.

In Group 2, are contrasted the vitamin B values of the same highly milled wheat product and Grape-Nuts. Growth failure eventually resulted from the former which was promptly corrected when the Grape-Nuts ration was substituted.

[1] Sherman, H. C., and Smith, S. L., "The Vitamins," New York, 1922, p. 176.

[2] Steenbock, H., Sell, M. T., and Nelson, E. M., "Fat-Soluble Vitamin, XI. Storage of the fat-soluble vitamin," J. Biol. Chem. 1923, LVI, 327.

[3] Steenbock, H., Sell, Mariana, T , and Jones, J. H., "Vitamin B. II Storage of Vitamin B by the Rat." J. Biol. Chem., 1923, LV, p. 411.

[4] Sherman, H. C., Winslow, C. E. A., Fisk, E. L., Greenwald, I., Jones, T. B. B., "The Present Status of our Knowledge of Vitamins and its Application to our Dietary." Am. Food. J., XVII, 1922, p 20.

[5] McCollum, E. V., "Scientific Nutrition and Public Health. IV Reform in Diet Necessary to Americans' Health." Hygeia, 303

[6] Am. Food J., XVII, 1922, p. 22

[7] Evans, Herbert M., and Bishop, K. Scott, Science, 1922, LVI, p. 650; and also Proc. Amer. Physiolog. Soc., 1923, LXIII, p. 396.

[8] Osborne, T. B., and Mendel, L B., "Milk as a Source of Water-Soluble Vitamin." J. Biol. Chem., 1918, XXXIV, p. 537; also Biochem. J., 1922, XVI, p. 363.

[9] Osborne, T. B., and Mendel, L. B., "Eggs as a Source of Vitamin B." J. Am. Med. Assn., 1923, LXXX, p. 302.

[10] Osborne, T. B., and Mendel, L. B., "Distribution of Vitamin B in some Vegetable Foods," J. Am. Med. Assn., 1922, LXXVIII, p. 1121.

Principles of Organization

(Continued from page 514)

features of the business, but its chief objective is to devise means for increasing and maintaining quality and uniformity of the product, savings in material and improvements in methods and processes whereby costs are reduced. Suggestions for improvements are handled by this group. Also they may be called upon by any department head for aid in problems pertaining to his department.

The various plants proper are in charge of superintendents whose duty it is to produce the called for quantities of product in as cheap a manner as possible and at the same time maintain quality and uniformity of product. The development group act as inspectors of quality and the cost accountants and statisticians indicate the effectiveness of production. In a well working organization these groups should aid the superintendents in their performance by pointing out to them points of losses and quality decreases, but they should, under no circumstances, use information thus obtained as a basis for destructive criticism. In this group, the superintendents act as understudies to the general superintendent, and the various foremen or sub-department heads as understudies to the superintendents.

What is popularly known as the "office" is in charge of a comptroller who may be the secretary-treasurer of the corporation. Where financial problems or policies play an important part in the business, the secretary-treasurer, as a corporate officer, usually is in charge of such and he may have a comptroller as an assistant in charge of records and accounts and office supervision. In this case, the control records of the business and the comparative records for all plants are kept in the general office. Plant office organizations are maintained at each plant, but their work is simplified, as is indicated on the chart. Since the large percentage of a business such as illustrated is on a cash basis, the bookkeeping department is usually small. There is a strong tendency in the baking industry at present towards an intensive study of costs, and systems are being installed for obtaining comparative unit costs of materials, manufacturing, distribution and administration. An analysis of such data will indicate points of weakness in performance and it is often possible to determine causes, remedy these, and effect many savings.

Organization charts are simple and concise methods of visualizing the organization problem. Naturally, the first step is to draw a chart which represents the present condition. All conditions of the business and its organization requirements are then studied and analyzed, and by keeping established principles in mind, a proposed plan is designed which should be the ultimate goal towards which the organization should develop. Since it is seldom possible to make a sudden change from the present plan to the ultimate plan, it is necessary in practice to design some intermediate plans, or even a series of such plans. Then changes in the regrouping of work, shifting of personnel and training of personnel are made gradually, so that no disturbances are produced in the operation of the business. However, since all changes are made with a definite object in mind, in time the ultimate plan will be reached. Organization work should be evolutionary and not revolutionary.

Meeting of Wholesale Grocers' Executive Committee

THE results of the conference of the executive committee of the National Wholesale Grocers' Association at Washington early in November are of tremendous importance to every branch of the grocery business. The list of topics discussed include subjects of importance to the whole field of mercantile efficiency and indicate that the national association is really accomplishing an important work.

Some of the important actions taken at the meeting and which were expressed in resolutions, are as follows: a refusal to endorse or recommend the "Better Grocers' Bureau"; an expression of vigorous condemnation of the proposed warehouse inspection plan for credit for damages or spoiled canned goods; that it would not be effective or helpful in eliminating unfair and unethical competition, to grant larger specialty discounts to jobbers until legislation makes is possible for the manufacturer to protect that profit. Plans were developed for cooperating with manufacturers and retailers in studying distribution of grocery products under the auspices of the Department of Commerce.

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of The American Food Journal, published monthly at Floral Park, N. Y., for October 1, 1923.

State of New Jersey, } ss.:
County of Essex, }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. T. Emery, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Food Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The American Food Journal, Inc., 37 W. 39th Street, New York City.

Editor, C. E. Wright, 37 W. 39th Street, New York City.

Associate Editor, Winifred Stuart Gibbs, 37 W. 39th St., New York City.

President and Business Manager, J. T. Emery, 37 W. 39th Street, New York City.

2. That the owners are:

J. T. Emery, 37 W. 39th St., New York City.

C. E. Wright, 37 W. 39th St., New York City.

Louis F. Dodd, 37 W 39th Street, New York City.

Karl M. Mann, 37 W. 39th St., New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (if there are none, so state.) None.

4. That the two paragraphs next above, giving names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any pesron, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is .... (This information is required from daily publications only).

J. T. EMERY,

Sworn to and subscribed before me this 8th day of October, 1923.

(Seal) JOHN J. F. CAVANAUGH,
Form 3526—Ed. 1922 Notary Public of New Jersey.
(My commission expires October 27, 1925.)

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BOOK REVIEWS

A Survey of the Milwaukee Market on Packaged Grocery Products. Prepared by the Merchandising Service Bureau of "The Milwaukee Journal." Milwaukee, 1923.

This exhaustive analysis of the market of one city is a direct service to wholesalers, retailers and advertisers of food products.

The information was gathered by means of a series of interviews and questionnaires, 9,000 in all, and the resulting data have been analyzed and compiled in six volumes, the present volume dealing wholly with packaged grocery products.

The study shows the brands used by consumers, the number using each, the number of dealers carrying each brand, the per capita consumption and the total volume.

According to the introduction: "Per capita consumption figured in this way gives the manufacturer an opportunity of figuring the potential untouched business, by taking the number of consumers not using the product and multiplying it by the per capita consumption of those already using it."

"To augment the statistics as secured from the consumer, dealer distribution is shown where feasible, as derived from a check-up with 10 per cent or more of all dealers and prospects for that given item."

As a result of this study several manufacturers have reported that following a check-up of their sales as taken directly from their books, and a comparison of their sales (actual consumers as shown for their product, multiplied by the per capita consumption) as quoted in these studies practically no variation was evident.

These and similar reports have convinced those responsible for the work that this type of survey is the most accurate which can be made.

Certainly every manufacturer, wholesale grocer or specialty manufacturer will find the report suggestive.

Household Engineering, Scientific Management in the Home. By Christine Frederick, Household Efficiency Engineer, American School of Home Economics, Chicago. $2.50.

Mrs. Frederick's work is well known, both to manufacturers and teachers, and this new edition of her book is timely.

True to her scientific management viewpoint the author relates her chapters on food to the various other portions of the discussion. She opens these chapters with a clearly presented statement of food needs and then proceeds in orderly fashion to show how these needs may best be met with a minimum expenditure of time, effort and money.

In an admirable "purchasing sheet" Mrs. Frederick furnishes a list that should prove a fertile source of practical suggestions for all food distributors and food consumers who are glad to work together in solving their common problems.

The packers will be interested in Mrs. Frederick's suggestions on buying meats in quantities, the specialty manufacturers in what she has to say on the subject of staple foods. In short, although written primarily for the consumer, the individual housewife, the presence of this hand book in a kitchen will probably open up new lines of cooperation between the consumer and the distributor.

The Boston Cooking School Cook Book. By Fannie Merritt Farmer. New Ed. Revised and Enlarged. Little, Brown and Company. Boston. $2.50.

This book has been aptly called the perennial best seller among cook books. Twenty-seven years of continuous service finds Miss Farmer's hand book just as popular and just as useful as ever. The author has passed on but her work lives and is being carried out by others.

New chapters have been added, dealing with food values, with canning, with purchasing meats in large quantities, and with many other practical problems.

One is tempted to sum up the book in this wise:

The recipes are failure-proof!

The Farm Cook and Rule Book. By Nell B. Nichols, M.S. The Macmillan Co., New York. $3.00.

Pointing out that most of the cook books and home making manuals on the market have been written for the city woman Miss Nichols proceeds to offer many good reasons for the preparation of her present book.

The point that problems of food distribution and preparation are quite different in rural districts from those prevailing in cities is, of course, well taken and the author has succeeded in producing a volume that is practical for the farm woman and suggestive for all who are engaged in the working out of new solutions for the problems of food production and rural distribution. In this latter group would fall domestic science and home institute agents and teachers who are working in rural districts.

Biology of Home and Community. A Textbook of High Schools. By Gilbert H. Trafton. The Macmillan Company, New York.

Teachers of home economics will find Mr. Trafton's book of definite service as a reference book for their classes in bacteriology and other biology courses.

Bacteria, both harmful and beneficial are discussed. The action of these organisms in butter making, in the fermentation of foodstuffs and in various other household processes is treated in such fashion as to afford a practical addition to home economics literature.

Nutrition and Clinical Dietetics. By Herbert S. Carter, M.D.: Paul E. Howe, Ph.D., and Howard H. Mason, M.D. Lea and Febiger, Philadelphia. $7.50.

This third edition of the work of Drs. Carter, Howe and Mason is certain to meet with the same cordial reception afforded to its predecessor.

Chapters on recent advance in the field of nutrition bring the book up to date. There are discussions of the latest theories in the feeding of children, one of the von Pirquet method of using nems as a working basis for energy calculations, and an exhaustive section on rickets.

The first part of the book treats the subjects of foods and normal nutrition, the second part deals with the composition of foods, the third part discusses feeding in infancy and childhood, and the fourth takes up feeding in disease.

One important feature of the book is the carefully worked out series of tabulations. These render practical assistance, either to the student or to the busy physician or dietitian who is forced at times to relegate certain responsibilities in the matter of diets to others.

It has been pointed out that beside these detailed services the book serves two larger purposes; so authoritatively is the material presented that the nurse gains a new idea of the importance of food in diseases; while the dietitian has acquired a new and indispensable reference book.

The Dietary of Health and Disease. By Gertrude I. Thomas. For the Use of Dietitians, Nurses, and Instructors in the Sciences that Pertain to Nutrition. Lea and Febiger. Philadelphia. $2.25.

An intermediate text for instruction in schools of nursing and home economics. Food chemistry, food preparation and dietotherapy are the main divisions, and nurses and dietitians will unite in praise of Miss Thomas' successful treatment of a difficult subject. It is comparatively easy to write for one's own group: to write so as to coordinate the interests of one's own and kindred groups is to perform a very great service.

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DIGESTS FROM FOOD MAGAZINES

The Business of Being a Grocer

"THE business of being a grocer can be done only by observing natural laws in the conduct of his own enterprise by observing prudence in buying and selling of commodities, the extension of credit, and proper use of judicious advertising," says Charles W. Myers in a recent issue of the "Grocers Association News." Mr. Myers emphasizes the fact that there is no sensational road to business revival but that the great need of the day is for common sense. The grocer must be constantly thinking and working—thinking of what is involved in conducting a retail grocery profitably and at the same time conserving energy, time and money.

Following trips to stores that were flourishing and others that were not, the writer concludes: "The business of being a grocer requires that advertised goods be displayed and sold at a reasonable profit. Bulk goods are in a section by themselves. Price tags are on every article. The store charges a fair profit, gives good service and quality and the atmosphere of the store from the owner down lingers with the consumer and causes him to come back again and again. The owner has a good system of doing business; he knows the conditions of the area he serves; and he goes to the utmost extreme in holding customers."

Mr. Myers believed that the problems are not distinctly different in different localities but there is a different problem for each individual retailer. In any case, he says, "Quality properly advertised, overcomes many handicaps of competition. News being information tends to bring people to the store about which people are best informed. Couple your advertising with service, backed by quality, satisfaction, courtesy and knowing your business profitably and indefinitely."

Tin or Glass for Canning Foods

IN a recent issue of the "American Journal of Public Health" the advantages and disadvantages of glass and tin containers for canning foods are discussed from the standpoint of health. Efficient sterilization and maintenance of that condition is given as the chief factor in the absolute safety of canned food. Although good quality of glass can unquestionably stand the temperature required for sterilization, the temptation is to use cheaper glass and to reduce the temperature to avoid fracture.

The disadvantages of tin are the effects of metal and possible poisoning from salts of these metals. However, with the tin which is used at the present time, if old and discolored tins are kept out of the market the danger may be said not to exist. Furthermore sterilization can be carried out at any temperature without danger of breakage and sealing is easily done. Absolute air tightness of can is most important.

Glass is more expensive to ship both because of weight and breakage, but it has many advantages esthetic and otherwise.

When all things are considered the writer concludes that tin is the best material of the two in which to do ordinary packing of foodstuffs.

Fiber Boxes in Export Service

IT is only within recent years that fiber boxes have been used at all for shipments by water routes but their use in such service has now come to be of considerable consequence, according to an article by G. R. Browder in a recent issue of "The Canner." The writer tells of some of the difficulties encountered before managers of steamship lines were convinced as to the safety of fiber boxes as a part of their general cargo. However fiber boxes—both corrugated and solid—are now accepted by established steamship lines and are used for foods in tin and glass, electric lamps, glass goods, dried fruits in cartons, paper, and a variety of manufactured articles. A particularly successful instance of the use of reinforced fiber boxes for goods of excessive weight, is the use of these packages in the importation of rubber from Java.

"A recent report contains the definite statement that not only do the managers of certain steamship lines like the fiber box because of its inherent good qualities as a sturdy package, but the foremen and cargo handlers both on ship and on dock prefer them because of the ease of physical handling and freedom from risk of harm to hands and clothing which these boxes afford. Both managers and men comment favorably upon the absence of damage to boxes and contents and the small amount of recoopering required."

Uncle Sam to Study Effect of Advertising

IN a recent issue of "The Spice Mill," Waldon Fawcett tells of the study now being made by the United States Department of Agriculture in order to determine what influence advertising exerts upon the popular demand for the exploited products. Food lines will be taken up one at a time focusing attention upon those which have had the benefit of advertising in goodly dimensions. The first report ready for distribution is that of cranberries, a representative product in that it is marketed in both bulk and package form, has been looked upon as a luxury rather than as a necessity, and because one task of advertising in this case was to lengthen the consumption period.

Interesting aspects of this study are: the ability of advertising to ove or minimize unfavorable market conditions, the value of copy along educational lines to stimulate consumption, and the value of advertising as a lever for moving a stagnant food product or coping with over production. Official opinion is that standardized grades should be established and that a given quality should always be sold under the same brand.

Mr. Fawcett states that an interesting line of conjecture concerns the effect of the arrousal of "advertising consciousness." "Will producers made wise to the possibilities of advertising aid be persuaded to undertake the distribution of their products?" Furthermore, the specialists hope to reveal that, for various food specialty lines the introduction of a small popular priced unit on the market will introduce the product to a new class of consumers and thus take care of any surplus.

Adapting Your Trade-Mark to Export Markets

"IS your trade-mark a good salesman abroad?" This question is asked by Bernard A. Kosicki, in an article in a recent issue of "The Wholesale Grocer." The writer gives three factors which operate toward diminishing the effectiveness of the domestic trade mark in foreign markets, namely: the trade-mark may be unpronounceable in the foreign idiom; the word combination may have no significance, or an undesirable connotation in the foreig language; or the coloring or illustrations may be objectionable to certain races.

Greater care in selection and more minute consideration of colors, illustrations and wording of the trade-mark are necessary in the Orient than in some other parts of the world, according to the writer. Some American trade-marks are universal and therefor very valuable, but in many cases it is necessary to modify or change them entirely before they can be successfully used in other lands.

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Catering for the Full-Tray Patient

EVERY household, at some time or other, harbors a full-tray patient, whose appetite because of confinement is finical or jaded and needs to be coaxed," says Mary Rogers DeMotte in an article in "American Cookery."

"It seems to me," she continues, "that there is no catering more important than that which coaxes the invalid back to health, and it should be treated accordingly. When you have a full-tray patient in the house, even though the doctor has told you that he may have anything that the rest of the family have, plan your menus with the patient in mind. You have no idea what a difference this will make in the speed of his recovery."

An example is given of a patient who was convalescing from tonsilectomy who was given a tray full of food, not one thing of which he could eat with comfort. Because the nurse had gone and no special deit was required, the family had carelessly prepared the tray without any thought for the patients' condition.

An attractive tray with an occasional surprise in food or appointments is not hard to prepare and is most worth while in that it gives the patient something to look forward to as well as the nourishment that he needs.

Recent Advances in Physical Education

"ST. JEROME in his letters on the right education of a young woman said to her mother, 'I would have your daughter so educated that having a body she should not know it.' This sums up not only the moral but the physical aim of education," says M. G. Brumbaugh in an article in a recent issue of "The Nation's Health." The aims and needs of the wiser educational activities of today are mentioned by the writer as follows: to detect physical defects, to remedy them, to conserve the increment of health that is brought to the school, and to set up a systematic and rational system of training that will establish health habits.

The National Physical Education Service has sensed the fact that this matter is of national concern and has promoted in Congress an Act known as the Fess-Capper Bill, the aim of which is, that in all the states the physical welfare of the child shall be as carefully conserved as its mental progress. Laws for universal physical education have been enacted in at least thirty-two states, and numerous national organizations have endorsed the movement for national physical education with federal aid.

In conclusion the writer says, "In press, pulpit, forum and friendly conference the fact is proclaimed that if we are to be mentally and morally the people we long to be, we must lay the basis for all sound intellectual advance and all sane moral guidance in the physical sanity and wholeness of our entire population."

The Cost of Selling Food

IN an article in a recent issue of "The Nation's Business," B. F. Yoakum gives the results of a long and expensive investigation of the cost of marketing food. The writer gives many figures in explanation of the high cost of food to the consumer. He believes that the solution lies partly in better and more skilful cooperative marketing methods by the farmer, but that those methods will never be put in force until the business world lends a hand.

He says in part, "When the business interests of the country realize that it is costing $2 to distribute foodstuffs to each $1 paid the producer, they will realize that it is of paramount importance to their business and the continued prosperity of the country that they cooperate with the farmer. No business, big or little, can operate on one-third of the dollar others pay for their goods. . . In asking for a more efficient marketing system the agricultural interests do not seek to impose new tax burdens upon the public, nor conditions that will in any manner disturb the business of the country. They only want what rightfully belongs to them, and every business interest can afford to unstintingly support such a policy.

The next big step in the writer's opinion is to push cooperative consumers' associations in large consuming centers. "Producers' and consumers' cooperative associations will become nation wide and will exert an influence which will carry power sufficiently strong to force the recognition that they deserve, eliminating the enormous burden that the farmers and consumers are compelled to carry.

The Uniform Vinegar Law

IN an article in the "American Vinegar Industry and Fruit Products Journal," H. J. Kaltenbach suggests that a lack of knowledge on the part of consumers is responsible for most of the adulterations of foods which are put upon the market. In spite of the fact that vinegars made of different materials differ in physical characteristics, the selection made by the consuming public is usually based on some idea of color, or perhaps the label on the bottle.

The proposed vinegar law is based upon the Michigan law with slight alterations, viz.:

1. The term VINEGAR as used herein shall be applied only to the product or a water dilution of such product derived by the alcoholic and subsequent acetous fermentation solely of fruits, grains, vegetables, syrups or sugars.

The vinegar resulting from the use of such alcoholic ferments must carry in suspension the extracted matter derived solely from the substance indicated on the label as its source. It shall be permissible, however, to distill alcoholic ferments derived as herein indicated and use the resulting distillate for conversion into vinegar and to reduce the strength of resulting vinegar by dilution with water. Such product shall be known as "distilled vinegar" and a statement of the substances used in its production shall be given.

2. No vinegar shall be sold or exposed for sale as cider vinegar which is not the legitimate product of pure apple juice, and the term cider vinegar shall be applied only and shall be construed to mean vinegar derived by the alcoholic and subsequent acetous fermentation of the exposed juice of fresh apples, the acidity, solids and ash of which cider vinegar have been derived exclusively from apples.

3. All vinegar shall have an acetic acid content of at least 4 per cent.

The American Apple

BY careful methods of selection of variety, of cultivation, propagation, pruning, protection, grading and shipping, American apples have become not only a year-round American household fruit, but have entered and now hold their own in the markets of the world," says Caroline Baldwin Sherman in an article in the "Forecast." The amount of apples shipped in domestic commerce in this country totals about one hundred thousand cars per year. Of this amount the city of Chicago uses about five thousand cars and New York City consumes approximately ten thousand cars or two million bushels.

The writer mentions three commercial areas that are outstanding in importance, New York State, the Appalachian region, and the Pacific Northwest. Of these three, New York is the oldest and the Pacific Northwest the youngest and perhaps the most progressive. The distribution secured by this section is of more than national interest, for apples from the Northwest have been exported to all continents of the globe and enjoy perhaps a wider distribution than any other farm product from one section.

Mention is made of market preferences, Kansas City and New Orleans being red apple cities, while Eastern cities show some preference for yellow varieties.

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The Value of Meat in the Diet

The Newer Knowledge of Nutrition Disregards Old Ideas Concerning the Value of Protein Foods

307

By C. ROBERT MOULTON

Director, Bureau of Nutrition, Institute of American Meat Packers

JUDGED by our newer knowledge of food values, a food to be satisfactory must meet the following requirements:

1. There must be protein, adequate in quantity and quality. In other words, we can no longer compare a pound of protein in one food with that in another but must look to the amino acid make-up to see that we have the proper combinations of these building stones.

2. Food must supply adequate amounts of easily available energy. In supplying this need, proteins, fats, and carbohydrates all take part. A reasonable ratio of these classes is generally advised, and the well selected dietary will divide the food among these three classes. Dr. L. E. Holt advises for children the proportion of 15 per cent protein, 50 per cent carbohydrate and 35 per cent fat, the percentage indicating the proportion of the total calories furnished by each class. For adults less attention need be paid to a proportion between carbohydrate and fat, but it is advised that the protein furnish from 10 to 15 per cent of the total energy. This means that an average adult needs to consume from 60 to 120 grams of protein daily, depending upon the body weight and degree of activity.

3. Foods must supply mineral matter in adequate quantity, quality and proportion. Certain elements can be singled out as especially important because of the quantity needed by the body or because the diet is more apt to be deficient in respect to these particular elements. Among these are calcium, iron and phosphorous.

4. In addition to these ingredients, which are largely materials of construction or sources of energy, the body must be supplied with adequate amounts of those vital but elusive things called vitamins. Four or more types may be recognized. These are fat soluble A, or the growth promoting vitamin, in the absence of which growth is impossible and certain eye troubles are prone to appear; water soluble B, or the antineuritic vitamin, in the absence of which growth is impossible and certain nervous disturbances appear; water soluble C, or the antiscorbutic vitamin, the absence of which causes scurvy and which may be associated with growth; vitamin D, associated with vitamin A but especially responsible for the prevention of rickets; and possibly vitamin X, which according to some recent work, affects the reproductive functions and fertility of animals.

C .Robert Moulton

5. An additional factor that has indirectly to do with nutrition and health because of its relation to the elimination of body wastes and food residues is bulk or indigestible matter in the diet. A ready elimination of body wastes and food residues is desirable. The use of sufficient water aids in this process, certain chemical ingredients of food assist, and indigestible matter such as the cellulose of green leafy vegetables and fruits are very effective because of the broom like action.

6. A sixth factor, by no means to be ignored, is that of palatability and flavor. Food that pleases the palate and appeals to the appetite is generally chosen in preference to food lacking in flavor. Also, certain of the foods of good flavor cause a greater flow of digestive juices and consequently are more readiy digested.

Meat as a Source of Protein

The leaner meats are rich in protein, having 20 to 22 per cent. Medium fat to fat meats have from 18 to 14 per cent protein. It has been generally recognized by investigators that the animal proteins such as meat and milk are superior for food to vegetable proteins, and it has been shown that casein, i. e., cheese, is inferior to whole milk proteins. Few attempts at accurate comparison have been made and some of these have met with criticism, but it is nevertheless of great value to summarize these results in the following tables. Thomas[1] used himself as the subject and placed the following biological values on the proteins studied as sources of material for repairing body tissues. The biological value of a protein as here used is the amount of body protein spared by 100 grams of the food protein.

Biological Value of Protein—Thomas

Beef	104
Cow's milk	100
Fish	95
Rice	88
Potato	79
Casein	70
Peas	56
Wheat flour	40
Corn meal	30

Martin and Robinson[2] used themselves as subjects and found that milk had a biological value of 51 and whole wheat a value of 33. Mitchell[3] has reported the following work with experimental animals, using two levels of protein consumption.

Biological Value of Proteins—Mitchell

5 Per Cent Level		8-10 Per cent Level	
Veal	97	Veal	84
Milk	94	Milk	83
Beef	92	Beef	81
Rice	88	Rice, bran	68
Oat	82	Oat	65
Yeast	77	Yeast	67
Cocoanut	77	Cottonseed	66
Corn	73	Soybean	64
Soybean	73	Potato	63
Casein	71	Alfalfa	62
Potato	69	Corn	58
Navy bean	29	Cocoanut	58
		Navy bean	38
		Tankage	33

McCollum[4] has done much work along this line and Mitchell has calculated the biological values as follows:

Biological Values of Proteins—McCollum

Milk	80
Casein	67
Wheat	48
Oats	to
Corn	12

Later more extensive work by McCollum[5] has furnished data for the following order of biological value of the proteins studied: (1) beef kidney, (2) wheat, (3) beef liver, milk, (4) beef muscle, barley, rye, (5) corn, oats, (6) soybeans, navy beans, peas. It is difficult to reconcile some of these results, notably the low value for milk of Martin and Robison and the high relative value of cereals as shown by McCollum's later experiments. The other figures, on the whole, are comparable.

Since the figures given represent the biological value of the digestible protein and since the proteins from the different foods differ in digestibility, it is of great practical value to take both factors into account in evaluating these proteins as food. The comparison is given in Table I.

The figures for digestibility used are approximate only but are sufficiently accurate. The "net" percentage of protein is the result of the product of the figures in the first three columns. The "net" value of the protein is the biological value multiplied by the digestibility. The biological value used is the average of those given above, omitting the figures of Martin and Robison. The net percentage of protein is not a good figure for comparison, since variations in water content alone make very great differences in the percentage of protein in the food. This table shows that beef and milk have proteins of high "net" food value, that the protein in cheese (casein) is of much lower value, that the cereal proteins are only about half as valuable as the animal proteins, and that the navy bean has protein of less than one-third the value of the best animal proteins.

The lean meats are a modest source of energy, giving approximately 700 to 800 calories per pound, while cereals and cereal products have from 1,100 to 1,600 calories per pound. However, the fatter meats run high in calories, reaching 2,800 calories in bacon and 3,550 in fat salt pork. Cheese runs from 1,400 to 2,100 calories per pound and navy beans, dried, about 1,560 calories. The green vegetables and fruits run from 100 to 300 calories per pound. It is well to remind ourselves here that calories are only one of several factors to consider in judging a food. The mineral matter and vitamine C in the fresh fruits and vegetables might well outweigh any advantage given to more concentrated foods by the higher calorie value.

Mineral Matter

While all informed persons know that meat is a good source of certain mineral elements, some pseudo experts state that meat is low in all mineral matter. Average leaner meats contain about one per cent of ash and the ash follows the protein content. The edible glands may run up to 1.6 per cent of ash. Milk contains 0.7 per cent; cheese may run from 2.5 to 5 per cent; flours, meals, and cereals run from 2 per cent down to practically nothing, with the majority below 1 per cent; and fruits and green vegetables from a few tenths of a per cent up to more than 1 per cent. Viewing all the analyses, it can safely be said that 1 per cent of ash in the food is above the average ash in the foods most commonly used by man.

In addition to the total quantity of mineral matter, the quantities of the different elements are of importance, as well as the ratios of one to another. This is especially true of calcium and phosphorus when other conditions are favorable to the onset of rickets. If the sunlight and vitamin factors are provided for, the ratio of calcium to phosphorous becomes of smaller importance.

Table 1—Net Food Values of Proteins

	Per cent. Protein	Digestibility	Biological Value	Net per cent of Protein	Net Value of Protein
Beef	20	95	92	17.48	87.4
Milk	3.3	95	89	2.79	84.6
Casein (cheese)	26.0	95	69	17.04	65.6
Corn	10	85	51	4.34	43.4
Wheat	13.5	85	44	5.05	37.4
Navy beans	22	80	33	5.81	26.4

Meat is low in calcium, and other foods such as milk, spinach, nuts or similar foods high in calcium are necessary to make up for this deficiency. On the other hand, meat is rich in both phosphorus and iron, two other necessary elements. Milk and cereals are also good sources of phosphorus. The diet, then, is more likely to be supplied with sufficient phosphorus than with sufficient calcium.

The iron content of the leaner meats is especially high and gives meat a place as one of the most important sources of iron among the foods usually eaten. Sherman[6] gives the iron content of foods of all kinds and his figures place lean meat[7] as fourteenth in the list of all foods. Among the highest are such foods as the yolk of the egg, dried lentils, dried beans, wheat bran, and molasses. The whole grains, such as rye, barley, and wheat, are also high in iron and many nuts are high in iron. Many of these foods are not eaten in the form given in the foregoing list. Sherman has selected a list of typical food materials for discussion in connection with iron in foods. The following table shows the twelve richest sources of iron discussed by Sherman and in addition milk and cheese.

Iron in Typical Foods

Milligrams in 100 grams fresh substance	
Egg yolk	8.6
Beans, dried	7.0
Peas, dried	5.7
Wheat, entire	5.0
Almonds	3.9
Beef, all lean	3.85
Oat meal	3.7
Spinach	3.6
Prunes, dried	3.0
Eggs	3.0
Walnuts	2.1
Peanuts	2.0
Cheese	1.3
Milk, whole	0.24

Lean beef free from visible fat is a rich source of iron of good quality, having 3.85 milligrams per hundred grams of fresh beef. Calculating from the protein content, a typical round steak would have 3.41 milligrams, a typical porterhouse steak 3.50 milligrams, a sirloin steak 3.02 milligrams and a typical chuck roast 3.07 milligrams per 100 grams of the fresh meat.

Vitamins in Meat

When meat and other edible parts of the animal are used as the sole or main source of food, the supply of vitamins seems to be adequate even including the antiscorbutic vitamin. In such a diet, blood and the edible glands form a prominent part. This is well shown by the diet of the natives of the polar regions, as well as by the explorers Steffansson and Amundsen, both of whom, with others in their parties, lived for two years on such a diet and retained excellent health. Dana, in his book, "Two Years Before the Mast," described the hardships of a trip around the Horn in the days of the big sailing vessel. Fresh meat was the one article of food relied upon during much of this voyage as a preventive of scurvy.

When used as a part of a mixed diet, however, meat makes but a very modest contribution to the vitamin content. Several compilers of vitamin tables show that lean meat has one plus for each of the three vitamins while three plus signs is indicative of large quantities. A recent publication[8] of the United States Department of Agriculture by Ralph Hoagland deals with the vitamin B content of edible animal tissues. Of meats, pork, even when cured and cooked, had a good supply of this vitamin while the other meats had too small an amount to be of value. The edible glands were rather rich sources of vitamin B.

The body fats of animals are sources of vitamin A of some considerable importance, although not as rich in this as are cod liver oil, egg yolk, butter, and a few other fatty materials.

A vitamin affecting fertility has been indicated by the work of Mattill[9] and of Evans and Bishop.[10] According to the work of the latter investigators, this vitamin is present in fresh meat, green leaves, and cereals, but is absent from milk.

Digestibility and Bulk

Meats and its products are easily and completely digested as a rule. The protein is nearly all digested, and the animal fats are about 96 per cent digestible, on the average. On this account, very little residue from meat and its products is left after digestion. If only foods of this nature were eaten the removal of food residues, metabolic products and bacterial residues from the colon might be delayed, at least in the case of the person of sedentary habits. Fermentation and bacterial action resulting would lead to distress if not to greater harm. Consequently, meat is too low in indigestible residues and fresh green leafy vegetables and fruits, or even the much over-rated bran, are needed to act as a broom for the intestines.

Another factor associated with digestibility is the length of time food remains in the stomach. Food remaining too long in the stomach may give rise to distress and therefore be considered indigestible. If food leaves the stomach too soon, a feeling of hunger will return promptly. Meat remains in the stomach a fairly long time and so gives a feeling of satisfaction and delays the return of hunger. On the average, beef remains in the stomach two hours, veal two and a half hours and pork three hours. For invalids or the very young it may be necessary to eat little or no pork, and even veal might be prescribed. But normally this is not a factor to be considered.

Flavor and Palatability

The appeal of meat to the appetite is too well known to need stressing here. It is perhaps, less well known that it causes an increased flow of gastric juice and so insures more speedy and complete digestion. This does not apply to the fat of the meat but to its protein, especially the extractives. Meat makes a strong appeal to taste and aids in the acceptability of less well flavored foods with which it may be combined.

Comparative Food Values

Several systems of comparing foods have been devised and used more or less. The use of calories was a handy method of comparing foods in respect to their energy values, but many make the mistake of thinking that the calorie is the scientific measure of food values. As a matter of fact it is only one of some six measures.

At least one system attempts to evaluate foods by assigning values to the calories, protein, and certain mineral elements. This is a step in the right direction, perhaps, but would any high score make up for lack of some vital constituent? Again, dry foods will always rank high by such a scheme, while such foods as milk, eggs, and lean meat will rank low. Finally, such a scheme must adequately account for differences in the biological value of the proteins. Until the time arrives when a system can be accepted rather generally that will account for such differences, a point system would seem to be of very limited value.

Meat and Health

The question of the place of meat in the diet can not be completely answered until something has been said about it as a source of infection and a cause of disease. Bacteria are fairly discriminating and require a good nutrient medium of sufficient water content. Consequently milk and meat are good breeding places if contamination occurs. Cleanliness and care in handling, elimination of infected animals, refrigeration, pasteurization, and cooking are relied upon for protection here. Vegetable-borne bacteria have at times worked havoc; witness the deadly bacillus botulinus. A perfectly sterile food is probably unattainable, as is a sterile digestive tract. We can, however, rely with confidence upon inspection, cleanliness, pasteurization, and cooking, to give us safe and wholesome food.

Meat has, perhaps, been singled out more than any other food as a cause of a long list of diseases. Successful men and races had what they considered the best of food and gorged on many meat dishes. Over-eating and drinking was their besetting sin. A menu of a single meal of William the Conqueror reads like a complete list of our domestic food animals and game birds. It is no wonder that they had gout and a lot of other illnesses.

Modern science and modern medicine have found the true cause of many of the diseases once laid at the door of meat, and in other cases while the true cause is hidden still it has been shown that meat eating is not a cause. As an instance in point, the following disease or condition may be cited. Rheumatism is due largely if not entirely to focal infections, such as bad teeth, tonsils or similar diseased parts, whereas formerly meat eating was given as the cause. The list of diseases and the evidence that diet, especially meat eating, has little or nothing to do with the case could be extended. But this is not a medical or health journal, and so only a few opinions of leading authorities will be quoted in conclusion.

Graham Lusk, Professor of Physiology, Cornell University, undoubtedly one of the world's foremost living authorities on nutrition, makes the following significant statement on page 18 of his book—"Food in War Time": "So far as is known, taking meat even in large excess is not harmful."

A. E. Taylor, M.D., for many years Professor of Physiological Chemistry, University of Pennsylvania, and recently appointed a director of the newly created Food Research Institute of the Leland Stanford University, in writing on auto-intoxication in Osler's "Modern Medicine," one of the most comprehensive works on the practice of medicine ever published, expresses himself as follows on page 530, Volume 2:

"Does the excessive ingestion of protein lead to abnormalities in the metabolism to autointoxication? There is current an idea that the heavy consumption of protein is harmful. It is supposed to be responsible for gout, innumerable ill-defined diseases, and, by the extreme vegetarians, for an intoxication sui generis. For all these claims there is no adequate basis."

Dr. J. J. R. MacLeod, Professor of Physiology at the University of Toronto, in the second edition of his extensive work on "Phsiology and Biochemistry in Modern Medicine," published in 1920, states on page 628:

"It is quite clear that man can get along under ordinary conditions with much less protein than he usually takes; but that really proves nothing, for the question is not can he, but should he so deprive himself? Are instinct and custom wrong and is Chittenden right? That is the question. To answer it many studies have been made of the condition of peoples who for economic or other reasons are compelled to live on less protein than the average. Are these people healthier, less prone to infections and degenerative diseases, and more efficient mentally than others? . . . . It has been quite clearly shown that, when the protein allowance is materially reduced, the people as a whole are less robust, mentally inferior, and, instead of being less prone to the very diseases which are usually supposed to be due to overloading of the organism with useless excretory products, are more liable to suffer from them.

"That a decided reduction in protein weakens the defense of the organism against infection is probably due to the fact that the fluids of the body normally contain a great variety

(Continued on page 590)

The Grocer and the Specialty Man

The Value of Cooperation Between All Agencies in the Grocery Business

By H. F. THUNHORST

Secretary, American Specialty Manufacturers' Association

EVERY business is at times confronted with evolution in marketing problems. The grocery business is no exception.

Many decades ago it was quite generally predicted that the wholesale grocery business had seen its best days. Instead of just quietly going to sleep, the wholesale grocer proved his economic worth by not only doing business at the same old stand, but greatly multiplying. The same prediction is being made effecting the independent retail grocer, and—mark you—with the same result.

The independent retailer is a community asset. He gives service, delivers and gives credit. He is one of the community, his money and interest is of the community. He not only sells groceries, combined with service, but is a benefactor in case of need. The very first one to be called upon when father is out of work, or when there is sickness in the family is the independent retail grocer, and he, in the bigness of his heart, is not found wanting. Many are the families who are under deep obligation to this same independent retail grocer for aid rendered in time of need. This is especially true in what are known as "Mill towns."

This human service of the retailer seldom comes to light. He gets no credit for it and only too often it causes his downfall.

The independent retailer will always be with us. There always will be people who want service and are willing to pay for it. The manufacturer needs the independent retail grocer for the introduction of his products. It is he on whom the specialty salesman calls and tells all about his goods in order that he in turn may pass it on to the consumer.

There are any number of articles that have been made a success by and through the efforts of the retailer without any advertising.

The problems of the grocery product manufacturer are at all times most complex. He must of necessity send out his missionary men to the retail trade.

It should be the aim and object of these missionary men to make salesmen for their products of the retailer and his clerks. Human contact is the very best kind of advertising. The more often the retail grocer is called upon, the better for the product; the more often the retailer gives an order for a certain product, the more often is the jobber's salesman, the jobber's buyer, and last but not least, the retailer himself impressed with the merits of the article.

H. F. Thunhorst

In the missionary work of the manufacturer, it too often occurs that some retailers will give an order just to get rid of the specialty salesmen and when the goods are delivered, refuse to accept. This practice on the part of such retailer cannot be too strongly condemned. It is unfair to both manufacturer and jobber. It adds to the cost of distribution and no jobber should be a party to such a transaction, which he would be if he permitted it. The manufacturer in such cases is helpless. The remedy is in the jobber's hands.

Another abuse the manufacturer is subject to is to have a specialty order accepted by the jobber who does not offer it for delivery. Another one is substitution. It is needless to say that neither of these should exist, but they do, not with the jobber of the higher order but with the other kind.

The specialty order system gives opportunities for unfair trade practices. It is for this very reason that the wholesale grocer should give to the manufacturer his most ardent support, and this can best be done by—

1—Taking the specialty salesman in hand and placing him in position to do intelligent selling.

2—Filling every specialty order accepted.

3—Not permitting the retailer to refuse delivery.

Another matter which is most costly to the manufacturer is the redemption of spoiled goods due to improper care by both jobber and retailer.

Buy in accordance with needs,
Turn out old stock first,
Keep floors clean,

(Continued on page 590)

THE CONFERENCE TABLE

The Transportation Situation Today

By ROBERT S. BINKERD

Committee of Public Relations of Eastern Railroads

Editor's Note: This is the first of a series of articles on transportation as related to the distribution of foodstuffs.

According to its custom THE AMERICAN FOOD JOURNAL plans to present information on both sides of this as well as of other questions.

Mr. Binkerd discusses the situation from the point of view of the railroads and without emphasizing the problems of transporting any one commodity.

Later issues will carry contributions on the same subject from food manufacturers, wholesale grocers, specialty men and others whose interests are vitally concerned.

THE inflation of war times, together with some of the policies adopted by the Government during the period of Federal control, enormously increased the cost of railroad operation. Even now wages and coal are each more than 100 per cent higher than they were in 1914. Taxes are 157 per cent higher. Materials and supplies are nearly double their 1914 prices.

The same factors which have decreased the purchasing power of the consumer's dollar have also decreased the purchasing power of the railroad dollar, which is simply another way of saying that they keep operating expenses high.

The increase in rates in 1920 was caused, not by the passage of the Transportation Act, but by this great increase in the expense of operating the railroads. At that time 95 per cent of all operating expenses had been established by action of the Government itself. They could not be immediately or quickly reduced by any action of railway management.

Nevertheless in the three and one-half years since the end of Federal control, railway management has succeeded in reducing operating expenses about one billion dollars a year. About one-third of this saving comes from reduced wages. The other two-thirds comes from increased efficiency and economy.

This is perhaps best illustrated by the last six months of 1922, during which a traffic was hauled practically equal to that of the last 6 months of 1920. In 1922 the railroads required 1,697,310 employes to produce this transportation, whereas in 1920 they required 2,109,188.

Economies in railroad operation are constantly being introduced. Motor car service is being installed on hundreds of branch lines, and many divisions have been consolidated in the interest of economy and efficiency. Locomotives are being used for longer runs, and cars and locomotives are kept in better repair. Every intelligent device is used to get the greatest number of tons in every car, to make every car move the greatest possible number of miles each day and to make each train haul the greatest possible number of cars.

So far in 1923 the railroads have succeeded in producing 511 ton miles of transportation from each freight car each day, as against 388 ton miles during 1922—an increase in efficiency of over 31 per cent.

More than half of this saving of one billion dollars a year has been turned over to the public in reduced rates through:

1. Voluntary reductions in export rates, 1921.

2. Voluntary 10 per cent reduction in rates on farm products, effective January 1, 1922.

3. Acceptance of the Interstate Commerce Commission's 10 per cent reduction in the rates on other products, effective July 1, 1922.

4. Voluntary readjustment of thousands of individual rates.

On the basis of the traffic being hauled this year these decreases are saving shippers approximately 735 million dollars.

The railroads this year are receiving an average income of 1.1 cents for hauling a ton of freight one mile. In 1914 they averaged three-quarters of a cent per ton mile. So far as their actual receipts for service performed are concerned, the whole body of freight rates today, returning to the railroads an income per ton mile, is approximately 46 per cent higher than it was in 1914. While the wholesale prices of farm products may be slightly less than 46 per cent above 1914 levels, the farmers and the railroads are the two great industries whose incomes show the smallest increase over their 1914 levels.

Freight revenue has not increased as much as the prices of general commodities have increased, nor as much as the cost of living; and not nearly so much as wages.

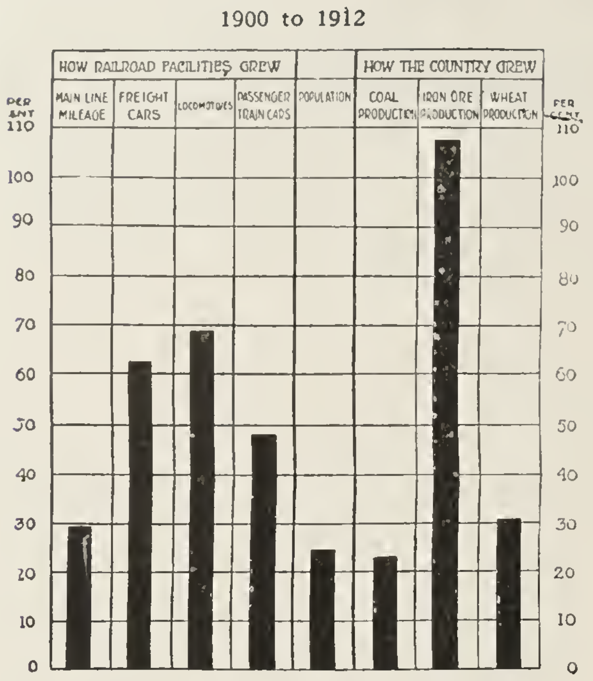
During the ten years prior to the war the public bodies which regulate railroad rates and hence railroad revenues, did not allow the railroads sufficient earning power. Trackage ceased to increase, and it became impossible to finance the addition of all the new cars, locomotives, and other facilities needed to keep up with the development of the country, as illustrated in the accompanying chart. This is the reason why in recent years every big burst of business activity has been accompanied by a greater or lesser car shortage.

In the year 1910, by action of Congress, control over the interstate revenues of the railroads passed completely into the hands of the regulating authorities of the United States and the several States. At about the same time the various states assumed practically complete control over the balance of the rates which determine the income and earning power of the railroads.

Referring to this situation in the April, 1923, number of the Yale Review, Arthur T. Hadley, President Emeritus of Yale University, says:

"It was unfortunate both for the Interstate Commerce Commission and the country that this legislation was followed by a period of rising prices. For if prices had remained stationary, it is not probable the Commission would have used its new powers to reduce railroad freight charges twenty-three per cent in five years.

"The fact that the railroads were already paying out seventy per cent of their earnings in operating expenses and taxes would have shown the obvious perils to railroad efficiency and solvency which such a course brought with it. But the Commission did what amounted to the same thing when it reduced freight rates five per cent between 1911 and 1916, while general prices were rising twenty-four per cent.



"The only way in which the solvency of American railroad companies could be maintained in the face of such drastic action was by increasing train loans and keeping wages down."

Since 1921 the improving condition of the railroads has been used for the benefit of shippers. Every dollar of new capital which could be raised, and every dollar of earnings which could be saved for improvements, have been invested in trying to bring the railroads abreast of the present traffic needs of the country.

New Capital Invested

During 1922 and 1923 the railroads have spent more than one billion five hundred million dollars of new capital in the development of the properties. From January 1, 1922, to October 1, 1923, they installed in service 220,986 new freight cars and 4,342 new locomotives. On October 1, 1923, they still had on order 64,601 new freight cars and 1,242 new locomotives.

During this year and last they have therefore committed themselves to a total addition of 285,587 new freight cars and 5,584 new locomotives, at a cost of about one billion dollars. In addition, they are spending about 620 million dollars on enlarging terminals, building new trackage, longer side tracks, and other improvements necessary to increase transportation capacity.

Transportation cannot be increased by merely increasing the number of cars and locomotives. Many years of experience have shown that for every dollar invested in rolling stock a railroad must ultimately invest from three to four dollars in other facilities in order to make that rolling stock produce all the transportation that can be gotten out of it.

Manufacturers of food products will be particularly interested in the efforts made by the railroads to provide an adequate number of box cars. Below are the number of new box cars put in service:

1920	18,747
1921	17,461
1922	27 613
1923 (Jan. 1 to Oct. 1)	52,963
On order Oct. 1	28,477
Total	115,261

In 1920 the railroads had practically no net earnings.

In 1921 they earned only about 3 per cent.

In 1922 they earned about 4 per cent.

In 1923 they will probably earn not quite 5 per cent.

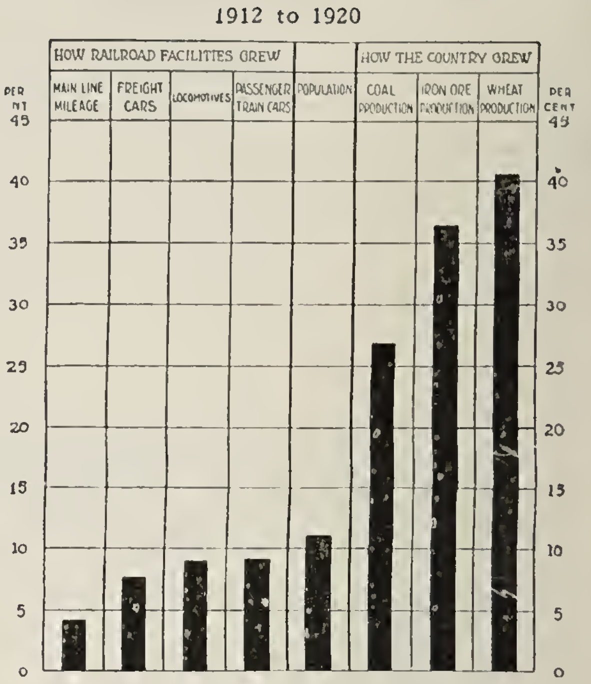
As earnings have improved more new cars could be provided.

This illustrates the inescapable fact that better earnings, better facilities, and better service necessarily go hand in hand.

A number of Western Senators have announced their intention of attacking the railroads, when Congress meets this December. Some want to reduce the valuation of the railroads by at least one-third. Others want to restore to state commissions the power to make state rates lower than are necessary to meet present operating costs. Still others want to repeal the Transportation Act as a whole in the hope that rates will be reduced, without giving adequate concern for the results on railroad service. All these attacks are directed at the earning power of the railroads.

Attention is called to the fact that out of each dollar of gross revenue which a railroad now receives, about 85 cents is paid out right away in operating expenses. Only 15 cents is left to pay the fixed charges and reasonable dividends on the enormous invested capital of the railroads.*

So that even if the Interstate Commerce Commission's valuation of the railroads could be reduced one-third it would save only one-third of that 15 cents, or 5 cents out of each dollar.



This would make possible only about a 5 per cent reduction in rates.

But such a reduction could be accomplished only by confiscating billions of dollars of property, valued and recognized by a government commission, and by taking away from railway management the one big tool with which it can create operating economies, and ultimately bring about lower rates.

That tool is credit. Credit depends upon earning power. Credit is essential to raise new capital to invest in new cars, new locomotives, and improvements to fixed property, which enable one to haul more tons in each train and thereby produce an economy in the cost of providing transportation.

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* The 15 cents out of each dollar of gross revenue which is left for the compensation of capital does not mean a 15 per cent return. Railroads have an investment of three or four dollars for every dollar of gross revenue which they receive in the course of a year. Thus a railroad which had only $3 of investment to $1 gross revenue, with 15 cents saved out of each dollar of gross revenues would be receiving a return of 5 per cent, which is 15 cents divided by $3.

Round Versus Square Packages

Expressions of Opinion from the Food Industry

IN order that we might have first hand information to present to our readers concerning the relative merits of the round and square package, the following letter was sent to a group of food manufacturers, jobbers, and retailers by the AMERICAN FOOD JOURNAL:

"We would like very much to have your views for publication as to the relative merits of the round and square package for food products. There has been some discussion of this question lately, and we would be greatly interested in your opinion relative to the factor of cost of the package, convenience in handling, economy of space, etcetera."

We quote the following from letters received in reply to this request:

From the Federal Advertising Agency, New York City:

"This has always been a moot question since packages were first introduced for the conveyance of food. It should, however, be fundamental that the character or form of the package be governed by the nature of the product.

"For products generally, the square package seems more practicable because of economy of space in packing for shipment, or storing, and for displaying on the dealers' shelves. The square package also offers better opportunity for the distinctive display of the trademark name, direction for use and other essential information for

(Continued on page 598)

AMONG MANUFACTURERS AND DISTRIBUTERS

Both Sides of the Swells Question

INTRODUCTION

BELIEVING that THE AMERICAN FOOD JOURNAL can best serve the interests of the food manufacturers and distributors by devoting a definite space to material from this division of the food field, we are, beginning with the present issue, planning to feature such a department.

While our province is broadly speaking, that of coordination and while we shall continue to aim at making our general articles of interest to the manufacturer and distributor, there will be a decided benefit for all concerned in hearing from those who are directly engaged in the field itself.

We therefore ask our readers to think of this department as their own. While limitations of space may make it necessary to omit some material that we should like to include, yet suggestions from manufacturers and distributors will always be welcomed, and, in so far as is possible, woven into the fabric of the department as a whole. You are all associate editors, with us!

The aim of the department is purely informational. When, for example, a matter such as the conference between the wholesale grocers and the National Canners' Association presents itself, we shall merely print news first hand, from both sides, in the hope that we may help both sides.

THE CANNERS' PLAN

Editor's Note: Copies of the plan as mentioned below may be obtained from Dr. W. D. Bigelow, 1739 H Street, Washington, D. C.

The following is an extract from a letter from Dr. W. D. Bigelow, director of the research laboratories of the National Canners' Association, to the AMERICAN FOOD JOURNAL.

"In our warehouse plan we are making only a very slight departure from the established custom of the industry. As you know it has long been customary for canners to stipulate in their contracts that they should receive the goods because of which claim was made if they desired. The return of such goods to the canning plants was made impossible by the action of the Bureau of Chemistry in promulgating S.R.I. 381, and it therefore became necessary to find some other means by which the goods might be studied. Our warehouse plan is the most practicable means that has been suggested and its advantages certainly far outweigh its disadvantages.

"The plan makes it possible to inspect the goods for which claim was made, to determine first whether they were actually packed by the canner against whom the claim was made, second, whether they were really spoiled and if so, the cause of their spoilage, and fourth what disposition can be properly made of them if not spoiled. The plan also makes it possible to insure the disposition of the goods."

FROM THE BUREAU OF CHEMISTRY

The following letter from C. A. Browne, chief of the Bureau of Chemistry of the United States Department of Agriculture, to Frank E. Gorrell, secretary of the National Canners' Association, is self explanatory:

Dear Sir:

This will acknowledge your letter of October 11, with enclosures consisting of communications from Messrs. E. J. Lea, Guy G. Frary and W. P. Hartmann, food officials respectively of California, South Dakota and Michigan. You review the efforts which have been made by your association and by the National Wholesale Grocers' Association since the issuance of Service and Regulatory Announcements, Chemistry No. 381, to find some practical method for adjusting claims between buyers and sellers of canned goods which will obviate all possibility of improper disposition of such goods.

You propose a tentative plan of action which you desire to place in operation in order that its practicability may be studied. You point out that the officials named above are members of a committee appointed by the American Association of Dairy, Food and Drug Officials to study this question and that each of them is ready to cooperate with you in your plan within his own state.

The plan in brief contemplates the selection of certain warehouses designated by state officials themselves in those states in which the officials are sympathetic with the plan. These warehouses will be located at San Francisco or Oakland, California; Los Angeles, California; Detroit, Michigan; Sioux Falls, South Dakota; Madison, Wisconsin; Columbus, Ohio; Austin, Texas; Topeka, Kansas; Indianapolis, Indiana; Pittsburgh and Philadelphia, Pennsylvania; Baltimore, Maryland; St. Paul, Minnesota; Syracuse, New York; Raleigh, North Carolina, and possibly also at Boston, Chicago, New Orleans and Atlanta.

You propose that when claims for spoilage are made upon consignments of canned goods the spoiled goods, instead of being returned to the canner for adjustment, as has heretofore been the case when question regarding the correctness of the claim was raised by the canner, will be forwarded to the nearest designated warehouse. At the time of forwarding this shipment, notification of all the facts will be given to the Bureau of Chemistry. Upon arrival of the goods at the warehouse, a representative of the canner will make a technical study of the situation, determine the justice of the claim and the cause of the spoilage, if any, and will then arrange for destruction of the unfit goods under supervision of the state or city official. In a later communication dated October 16 you state that no goods will be removed from warehouses without notice being sent the Bureau of Chemistry and the state official long enough in advance to permit steps to be taken to prevent their removal if such a course seems necessary.

You ask whether this plan may be put into operation in an experimental way without opposition from the Bureau.

You are undoubtedly familiar with the reasons which led to the issuance of Item 381. The practice of permitting spoiled goods to be returned in interstate commerce to the shipper for adjustment purposes had gone on for many years. Reports from state officials, as well as from the Bureau's own field representatives, indicated that the return of swelled canned goods to the packers created abuses which could not be effectively corrected by the state authorities so long as interstate traffic in such goods was permitted unchecked. Item 381 was therefore issued as a step towards the protection of the consumer against the redistribution of such products after they had passed in interstate commerce and in recognition of the fact that all interstate traffic in material of this kind constitutes a violation of the Federal Food and Drugs Act.

The plan which you propose appears to offer a system of immediate control of such swelled canned food products by state authorities which presents certain advantages over the control which can be exercised under the Federal Food and Drugs Act. Emphatic representations have been made to the Bureau that while Item

381 may be of material protection to the consumer in that it prevents the return of decomposed food products to the canner, any failure to carry out agreements between the canning trade and the distributors contemplating the destruction or absolute removal from the market of such goods as an outcome of trade adjustments will inevitably create an incentive to the retailer or jobber to assume the risk of placing articles unfit for food in the channels of consumption.

Because the plan you offer appears to have the advantage of removing this incentive it would appear to make for the protection of the consumer. Since this matter was taken up with the American Association of Dairy, Food and Drug officials, and since that association appointed a committee to study and report upon the proposal at its next meeting, the Bureau would under no circumstances take action of a final character upon the plan at this time. Because, however, it offers advantages in the way of protection to the consumer as indicated above, because it has the approval of many state officials, and because the committee of the association is favorable to a trial of the scheme, this Bureau will not be disposed for the time being to offer objection to its inauguration in an experimental way in and between those states whose officials are favorable to the scheme.

It will expect, however, that proper notification will be given in each case before shipment to the state official where the goods are located and also to the official of the state of destination. Similar notification should be given to city officials when they desire it. It will further be expected that shipments will not be made over the objection of officials.

The Bureau will regard the plan as experimental only, and, of course, reserves the right to withdraw its approval should future developments show the plan to be impractical or to result in abuses detrimental to the interests of the consumers. Shipments of spoiled canned foods moving in the ordinary channels of interstate commerce without the control by state officials at destination contemplated by this plan will be proceeded against as heretofore.

There will be no objection to your giving out this letter to the members of your association and other interested parties.

Respectfully,
(Signed) C. A. BROWNE,
Acting Chief.

What the Grocers Say

Recommendations for Swells Credit Plan

Despite vigorous and repeated protests by retailers, wholesalers and chain grocery stores—the distributors of canned food products—various canners' organizations have endorsed the return-to-warehouse-and-inspection-plan-for-swells-credit and negotiations are now under way looking toward the establishment of zone warehouses to which spoiled canned foods may be returned for credit. It is reported that the Bureau of Chemistry, U. S. Department of Agriculture, may modify S. R. A. 381, which as it now stands prohibits the interstate shipment of spoiled foods, so that damaged canned foods may be, if buyer and seller so agree, returned to the central warehouses proposed to be established and supported by the National Canners' Association in various sections of the country.

This concession is purely experimental and will be permitted only where agreeable to local and state food officials, under strict control of all the various governmental agencies and where buyer and seller agree to follow this procedure. This modification has not yet been issued. When or if it is, members of the National Wholesale Grocers' Association will, as usual, be notified promptly. Such modification, however, cannot compel the return of swells to the zone warehouses. If it will merely permit their return (where buyer and seller so agree made in the contract) under strict regulations, perhaps under individual government permits. But some cities will still require prompt destruction.

The National Wholesale Grocers' Association has endeavored to solve this problem, as usual, by the conference method. At least six separate conferences have been held with the National Canners' Association. Splendid progress was made and agreement was approached on the basis of a graduated percentage allowance credit plan or a label-return credit plan. Suddenly the canners proposed the involved and expensive return-to-warehouse-and-inspection-credit-plan.

After study the following distributors and their organizations have gone on record as vigorously and unequivocally opposed to the whole warehouse scheme, as onerous, expensive, impractical and involved: Canners' Conference Committee of the National Wholesale Grocers' Association — in a referendum 768 wholesale grocers voted in favor of plans that would obviate the necessity of rehandling swells (only 29 voted for the warehouse plan); National Wholesale Grocers' Association; California Wholesale Grocers' Association; Iowa-Nebraska-Minnesota Wholesale Grocers' Association; St. Louis Wholesale Grocers' Association; National Association of Retail Grocers; National Chain Store Grocers' Association.

One wholesale grocer, sincerely worried as to the ultimate effect of the warehouse-inspection plan on the future distribution of canned foods, has in the following sketched the involved proceedure that will probably result when swells appear and an effort is made to secure credit by the distributor under the warehouse plan: "Retailer finds swell; notifies wholesaler in writing; wholesaler writes canner; canner writes wholesaler to ship swell to zone warehouse; wholesaler writes retailer to ship swell to warehouse, warning retailer to comply strictly with all governmental regulations in connection therewith; retailer packs and ships swell to warehouse, prepaying freight; retailer sends bill to wholesaler; wholesaler forwards bill to canner. In course of time inspector, employed and paid by National Canners' Association, visits zone warehouse, inspects goods and decides whether claim is to be allowed or disallowed; inspector files report; if claim is allowed wholesaler endeavors to collect it from canner; if successful, wholesaler pays retailer; if claim is disalowed, because it is a springer rather than a swell or because the guaranty date has expired or for any other of a number of reasons, the wholesaler or the retailer loses the freight paid, cartage and packing expense and the canned goods, unless return freight is paid."

In addition, it should be remembered that this system presupposes an elaborate and involved coding of individual cans and labels and that the canner who is a member of the National Canners' Association will be charged one fee for this warehouse inspection service and that the non-member canner will be charged another and a higher fee. And, in addition, it should be remembered that there are 4,000 wholesale grocers and 400,000 retail grocers. If the retailer only averages 10 returns per year 4,000,000 claims will have to be handled. Ponder this!

This picture may be underdrawn or overdrawn. It is intended to be approximately correct and fair, and is based on the reasonably complete data at hand.

In view of all these facts cited above, the National Wholesale Grocers' Association desires to reiterate its opposition to the warehouse-inspection-plan, in toto, and at the same time to urge wholesale grocers, in the best interests of the canning industry and its distribution problems, in particular, to ask for a simple, workable credit plan when they buy from the individual canners. There are three such plans, viz:

1—Contractual provisions permitting the return of labels for credit, or

2—Contractual provisions, when buying from a canner, packing a full line of canned food products, allowing one-half of one per cent flat-allowance with proper safeguards, or

3—Contractual provisions allowing graduated percentage allowances by products—with proper safeguards.

The following is therefore the plat-

(Continued on page 590)

CONVENTION NEWS

News From Many Conventions

Various Trade Associations Elect Officers for the Coming Year

Executive Board of Retail Grocers Meets

The executive board of the National Association of Retail Grocers met in Kansas City, November 12, 13 and 14. Reports from the president, secretary and treasurer indicated the splendid progress being made by the association.

A report of the 1922 study of operating costs which was made at Harvard University was discussed and some changes made in the plans for future research which will add materially to the value and effectiveness of the work.

It was decided that every effort should be put forth to cooperate with other food trade factors in carrying out the program of the division of domestic commerce of the United States Department of Commerce. This program should undoubtedly go a long way toward the elimination of wasteful practices in the opinion of the executive board.

The proposed standardized legislation and the plan of organization of the Retailers' National Council were endorsed.

The secretary was instructed to endeavor to secure the interest and cooperation of the retail grocers in the Canned Foods Week, the National Live Stock and Meat Board, the Wheat Council of the United States and the Chamber of Commerce of the United States.

Plans were made for the further advancement of the "Grocers' Bulletin," the official magazine of the association, and for the further development of the Better Grocers' Bureau.

National Container Association Convenes

The annual meeting of the National Container Association was held at the Biltmore Hotel, New York City, November 20-21. Officers elected for the coming year are as follows:

President—John L. Barchard, Hummel & Downing Company;
Vice-President—Col. C. W. Gaylord, Robert Gaylord, Inc.;
Secretary—H. S. Adler;
General Manager and Treasurer—G. R. Browder.

Executive Committee:
J. P. Brunt,
Mid-West Box Company;
James B. Fenton,
Buffalo Box Company;
Geo. W. Gair,
Robert Gair Company;
W. S. Goodwillie,
Atlas Box Company;
Irving Hill,
Lawrence Paper Manufacturing Co.;
Samuel Samuels,
American Corrugated Paper Products Corp.;
Clarence J. Schoo,
General Fibre Box Company;

A uniform plan of accounting for the container industry was presented to the association by Grafton Whiting, chairman of the statistical committee. Hon. Sydney Anderson, Congressman from Minnesota, speaking in behalf of the National Transportation Institute, gave an address on the subject, "The Relation of Transportation to Industry and Agriculture." Another important address was that of W. R. Bassett of Miller, Franklin, Basset & Company, on the subject, "Economies in Business."

Coffee Roasters' Convention

Officers and directors elected at the recent convention of the National Coffee Roasters' Association are as follows:

President—Frank O. Field (Brownell & Field Co.), Providence, R. I.;
Vice-President—R. W. McCreery (Western Grocer Mills), Marshalltown, Ia.;
2nd Vice-President—Wm. G. Volkman (A. Schilling Co.), San Francisco, Cal.;
Treasurer—Frank Ennis (Ennis-Hanly-Blackburn Coffee Co.), Kansas City, Mo.

Board of Directors:
For Three Years
F. J. Ach (Canby, Ach & Canby Co.), Dayton, Ohio;
J. F. Atwood (Atwood & Co.), Minneapolis, Minn.;
F. C. Thomas (Sprague, Warner & Co.), Chicago, Ill.;
W. C. Scull (Wm. S. Scull Co.), Camden, N. J.
For Two Years
Chas. H. Hamilton (Merchants' Coffee Co. of N. O., Ltd.), New Orleans, La.;
E. C. Joannes (Joannes Bros. Co.), Los Angeles, Cal.
R. W. McCreery (Western Grocer Mills), Marshalltown, Ia.;
F. S. Fishback (The Fishback Co.), Indianapolis, Ind.
For One Year
F. P. Simme (Rust-Parker Co.), Duluth, Minn.
Wm. Fisher (C. F. Blanke Tea & Coffee Co.), St. Louis, Mo.;
Ross W. Weir (Ross W. Weir Co., Inc.), New York City;
Nathan Eckstein (Schwabacker Bros. Co.), Seattle, Wash.

American Bottlers Elect Officers

At the recent annual convention of the American Bottlers of Carbonated Beverages, the following officers were elected for the coming year:

President—Sidney W. Lee, Birmingham, Ala.
Vice-President—C. B. Chesterman, Sioux City, Iowa.
Treasurer—I. M. Oberfelder, Baltimore, Md.
Secretary—Junior Owens, Washington, D. C.

Executive Board:
Three-Year Term
H. E. Kimball, Millis, Mass.
J. W. Goetze, San Francisco, Calif.
Carl A Jones, Bristol, Va.
William M. Williams, Akron, Ohio.
Two-Year Term
Charles V. Rainwater, Atlanta, Ga.
W. P. Reeves, Greenville, Texas.
W. B. Hatfield, Brooklyn, N. Y.
Frank L. Johnson, Statesville, N. C.
One-Year Term
James Verner, Jr., Detroit, Mich.
A. B. Freeman, New Orleans, La.
L. G. Heibel, Madison, Wis.
Hugh J. McMackin, Boston, Mass.

New York State Canners Meet

More than 400 members and associate members attended the meeting of the Association of New York Canners at Rochester, December 12-13. Among the speakers were James A. Anderson, president of the National Canners' Association, Philip A. DePuyt, president of the National Association of Retail Grocers, Dr. R. W. Thatcher of the State Experiment Station, and C. W. Hauck of the United States Department of Agriculture.

Officers elected for the coming year are as follows: president, Jay D. Fuller, South Dayton; vice president, Roy W. Heminway, Auburn; treasurer, E. O. Shuster, Rochester; secretary, John P. Street.

National Canners to Meet

The National Canners' Association will hold their annual convention at Buffalo, January 21-26, with headquarters at the Statler Hotel.

EDITORIAL

Announcement

Beginning with the present issue Winifred Stuart Gibbs, Associate Editor of THE AMERICAN FOOD JOURNAL, assumes the post of Editor.

C. E. Wright, the former editor, remains as one of the publishers and advisers in matters of editorial policy.

Blanche Ingersoll, Assistant Editor, will hereafter carry the title of Associate Editor.

"All Are Needed By Each One"

AT first blush there would seem to be slight connection between poetry and vinegar; yet our friends in the vinegar industry would do well to hunt up their copies of Emerson and reread his "Each and All."

"All are needed by each one,"
"Nothing is fair or good alone."

Once let the vinegar industry adopt that couplet as its motto and it is easy to see some of its perplexities receding into the distance.

Furthermore, we might go on to remind these friends of ours that there is excellent authority for the statement that a "house divided against itself can not stand." Only that would seem to be "preachy" and our purpose is merely friendly counsel. Besides, we refuse to believe that any of the food trades is so shortsighted as to let serious dissession creep into its ranks.

While there is yet time, therefore, may an impartial and friendly observer offer to the vinegar men a few suggestions?

The issue now before the Supreme Court of the United States is splitting opinion; very well, then we ask, "Are both sides fully informed regarding the details of that issue?"

It is truly amazing what can be accomplished by thorough analysis and subsequent broadcasting of results. Just here is where the matter of mutual interests comes in. Let the vinegar manufacturers turn to their own American Cider and Vinegar Manufacturers Association and secure much information as possible and the chances are strong that differences of opinion will merge into a strong working platform that is sure to benefit the entire industry.

The good New England poet was right; all ARE needed by each one!

Needed for the inspiration that only good team work can give: needed for the benefits that surely follow sound organization; needed supremely for the purpose of acquiring that sense of internal solidarity which is vitally necessary if members of a group are to present a united front to the world.

Why not let the wholesome, preservative attributes of the product in question take on a double significance, and in a figurative sense, set the key note within the industry? Unity, peace and concord, not to mention efficiency, are sure to be the results.

Applied Science in the Food Field

THE manufacturer who makes it a fixed practice to study his product scientifically is the one who leads. No longer is he dubbed a "high brow."

A recent issue of "Baking Technology" relates the story of a batch of bread that had been sent by a student at the Institute of Baking to the wrong destination. Nothing daunted, the instructor seized upon the mass of dough and forthwith proceeded to direct his class to do original experimental work with the mass. The result was the salvaging of the dough and, what was even more important, the stimulating of members of the class to such good ends as to set them thinking along new lines.

The training school idea is not a monopoly of the bakers nor of the other industries that have adopted this method of developing their work. THE AMERICAN FOOD JOURNAL is so convinced of its sound business sense, to say nothing of its scientific value, that it takes this occasion to lift its voice in a plea for yet other Institutes in yet other industries.

Products studied and tested within the various industries are the products that are their own best advertising agents.

The Question of Standardization

IT is most gratifying to note the fine work being done jointly by various food trades and their respective food control officials along the lines of standardization of products within the respective industries.

The National Canners' Association, for example, has for some time been busy on a program of standardization and has submitted data relating to their own work to the food officials. The officials in turn, find these data of supreme service in their work of formulating official standards. The bakers are another notable example.

Again, certain food industries have appointed law enforcement committees, or vigilance committees, to report to their own association officials any violations of food laws Such helpful cooperation, naturally makes it possible for the food control officials to do far more effective work than would otherwise be possible.

Individual pride in the individual industry is the best of foundations on which to erect a strong fabric of national prosperity, not to mention the national health that comes from a pure food supply.

Our Present Methods of Distribution

PRESIDENT J. W. HERSCHER, of the National Wholesale Grocers' Association, struck a chord of sanity, constructiveness and efficiency when he said:

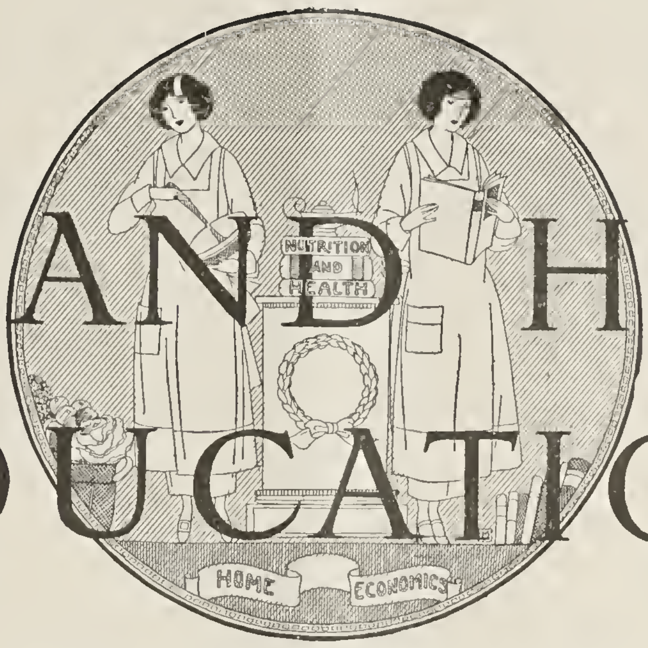
'It should be remembered that the manufacturer-wholesaler-retailer method of distribution in the food industry, is the system best suited to the democratic needs of this nation. It grew out of and with America. To flash an example, what kind of a town would Burlington be today, if it were not for its independent merchant? Experience has shown time and again that where the same service is performed, where equal purchasing opportunities prevail and where intelligent and progressive executives are in control, no cause of complaint can be laid against the so-called classic system by any one.

"This present system, thoroughly American in letter and spirit, is worth saving. It can only be destroyed by outrageous abuses and an abuse-proof system will never be found! The friends of this system, and whether it is generally appreciated or not, its friends include the producer, the manufacturer, the consumer, the retailer and the legislators, might well restudy their ideas and policies of doing business, exercise their best judgment and legally conceded right of enforcing an orderly system of distribution—and then successfully follow the dictates of their judgment! Double-crossing, unfair practices, preferential secret rebates and malicious drives to ruin competitors, regardless of the effect on innocent by-standers, and ultimately upon the public should be thrown on the scrap-heap.

"If there is a will to strengthen the normal system of production, manufacture and distribution, the system that has served America so completely and safely throughout her period of growth and development, there is a way."

We have purposely quoted somewhat at length from Mr. Herscher's address before the Iowa-Nebraska-Minnesota Wholesale Grocers Association in October, as it seems to us that there is a message here for a number of our reader groups.

FOOD AND HEALTH EDUCATION



Edited by WINIFRED STUART GIBBS
Associate Editor, BLANCHE INGERSOLL

10c a Copy — NEW YORK, DECEMBER, 1923 — $1.00 a year

Home Economics and General Culture

Cultivated Taste the Best Background for Home Economics Education

THE two instructors were excellent friends; one taught English in a metropolitan high school, the other lectured on foods at an equally metropolitan university.

The English instructor was unconscious of it but her manner toward the foods lecturer was tinged—just tinged—with patronage. Was not she illuminating Chaucer for the daughters of those who had but lately landed at Ellis Island? Did not the foods lecturer deal merely with such sordid details as bread and vegetables and milk? What matter if her students were chiefly post graduate college women who were working for masters' degrees in home economics? Every one knows that Chaucer has more atmosphere, even although bread and milk may have more flavor!

One day these two women met at luncheon.

Said the English instructor to the foods lecturer:

"How I wish that you knew the story of 'The Ancient Mariner.' Such an amusing thing happened today: one of my girls said something so funny about it, but no one who does not know the story could appreciate it."

With amused thoughts flashing back to the really unusual library in which she had at the ripe age of six begun a life time of happy wanderings, the foods lecturer merely remarked pleasantly; "Now and again we home economics women read something other than cook books; try me on the story."

NOW this incident is not cited that we may revile our academic sisters for their lack of appreciation of our culture. Inherent culture is taken as matter of factly as the daily ablutions. Rather is the story used by way of calling attention to a service which the home economics woman may perform for her students.

Let her use her own background of broad culture—for it is a noticeable fact that such a background is the rule rather than the exception with home economics women, to point the moral and adorn the tale of any sermon which she may preach on the subject of "pre-requisites" for a course in home economics

Perhaps the best possible preparation for work in home economics would be a past that included the acquisition of a cultivated taste.

To some this would come as the result of association with master minds, whether in the scientific or the literary field; others would have revealed in a life time of hearing good music, still others might have had as their associates those who had reached the top among painters.

MARY AUSTIN, an outstanding figure in the world of American letters, said recently that writers must seek out painters, and musicians, writers, if each hoped to make of his own specialty a rounded thing, a vital expression, not of his own self and his own art, but of that larger force to which men give many names, according to the moment's need and the moment's fulfillment.

So it should be with the home economics woman.

Think back to the homes where you most delight to visit.

Is there not present in these homes an indescribable something, far removed from luxurious furnishings and ceremonious service, that speaks of wide contacts, of many interests, of an appreciation of aesthetic values as well as of the practical?

Is it not a foregone conclusion that the woman who goes to her foods or textile laboratory with at least an undestanding of all this, will give to her courses a richer content than will the one who has conscientiously swept from her mind everything but her own particular "subject"?

Nor is this the only point.

The same principle applies to the so-called cultural courses in school or college.

LET the woman majoring in home economics quaff the rich draught which the English teacher holds out to her lips; let her remember that the wise Pepys gave thought to the place of "victuals" in the scheme of life; that Thackeray offers a sense of kinship to the makers of savory soup.

Let this woman steep her soul in Beethoven and quicken her spirit by an afternoon in a picture gallery, and, who knows? Home economics itself may some day be classed as a "cultural course"!

Health Rhymes and Cuts Outs

Cooperative Projects for the Foods and English Teacher

Milk the Builder

THERE seems to be no limit to the possibilities lurking in the health cut outs featured in FOOD AND HEALTH EDUCATION for November.

That the writing of verses or rhymes is an effective method for driving home nutrition lessons is generally conceded. It occurs to us that after the children have been guided in the working out of such original posters as those described on page 522 of the November issue the teacher may like to develop this idea along the lines of a cooperative project with the English teacher.

There might be fresh interest in writing rhymes if the amateur poets knew that they were to have the opportunity of planning and executing their own illustrations therefor.

Some of these posters are so attractive and artistic that we are glad to have them as permanent exhibits on our office walls. The heavy mat stock used as a background and the beautifully colored crepe paper cut outs make posters which are very effective and delightful and dignified.

Since the Dennison Manufacturing Company has been good enough to cooperate further with us by sending new designs for these cut out posters it occurs to us that our readers may like to visualize such a cooperative project as that outlined.

To this end we give a set of food verses, illustrated by the cut outs.

Milk the Builder

I build your bones to make you straight,
  I build your flesh to give you weight,
I help make blood, I keep you warm,
    Sing Ho,
    For Milk
    The Builder!
And then I make your body grow,
  Till you are big and strong you know,
So lift your glass of milk on high,
    Sing Hey,
    For Milk
    The Builder!

The milk poster was developed from designs on tray covers made by the Dennison Company.

Food verses similar to those illustrated would interest the older students who no longer care for the jingles of the little folks. The fact that many of the figures represent Mother Goose characters might not appeal to the more sophisticated older students, but as a rule even we older folks love Mother Goose. However, the variety of characters available in decorated crepe papers, napkins, table covers, et cetera, would be sufficient to satisfy even the most particular of the older children.

Figures and landscapes are also cut from the various crepe paper novelties, and the lettering is done in India ink.

The design for a fruit lesson is particularly intriguing with the cunning little imps balanced on the basket of beautifully colored fruit. One stands guard over the whole by balancing on his tummy on the handle of the basket. Another lassoes a big pear in truly western style while the third looks as if he had really had too much fruit for once in his short impish life. Posing these imps in unusual positions is part of the fun of making these cut outs.

Little Boy Blue Come blow your horn,
Tis time for the children to dine
Regular meals at regular hours,
Make boys and girls feel fine.

Songs of Fruit

The fruit poster might be used to illustrate verses along the following lines:

Orange Song

In Florida fair
Where skies are blue,
Deliciousest oranges
Grow for you;
They've lime to turn
Your teeth and bones
As hard as any polished stones;
And phosphorous makes their juice so
    sweet
Specially valu'ble fruit to eat;
While even of iron there is a trace,
To put pink cheeks in the whitest face.

And, as I sing
This orange song,
From California
Far and long,
There comes a hail
From farthest west,
"Some think OUR oranges are the
    best."

Apple Song

Out in the orchard in the Spring
There's apple snow over everything;
Leaves of blossoms all pinky white,
Tumble and float in the air-shine
    bright:
Now, in September's golden glow
There's another kind of apple snow:

Made by mothers so kind and good
For little children's daily food.
This apple snow is made with egg
And apple sauce, just taste, I beg.
You'll find it good for blood and muscle,
So you can romp and scamper and tussle;
For apples help keep the doctor away,
If you but eat one every day!

My Food Garden

Prune Song

Prunes for breakfast?
Well, I should say!
We'd like to have 'em every day.
They're cooked all tender, and puffy, quite,
You can tell at the very firstest bite
That mother knows her business well
When it comes to cooking for Dad and Belle.
Prune juice is good for the baby too,
There's iron and sugar,
And not just "goo";
Iron for strength
And sugar for heat—
I'll say that prunes are a bully treat!

Grape Song

Come raise your glass, I give the toast,
Drink to the children dear,
The glass is filled with grape juice sweet,
The best drink of the year.
No wine was ever like it,
'Tis food and drink in one;
I toast your health,
As you toast mine,
Or ever the day be done!

There's health in every droplet,
And never a headache drear;
Bottle it in September,
But drink it all the year!

Outdoor life, wholesome play and the pleasures of gardening are all illustrated by the garden poster. The figures of the children and the house were cut outs from crepe paper napkins, while the tree is taken from a decorative crepe. Various sports might be represented on such a poster.

My Food Garden

My flower garden is fair and sweet,
But my garden of foods holds a wonderful treat;

For in this garden all in a row,
Are vegetables waiting to make us grow;

Peas and spinach and beans and chard,
All of them working as hard as hard!

Striving to make me tall and strong,
Able to work my whole life long.

Then there are carrots and corn and peas,
Surely there never were friends like these!

The whole long list I have not told,
But each one is worth its weight in gold.

The final cut out in the present series sets forth the value of water drinking, a lesson that has its own place in a course in foods and nutrition. These designs are taken from table covers.

Jack and Jill sing of water

Here is a suggestive water verse which may be extended ad lib.:

Rippling and dancing the water cool
Forms for our cups a crystal pool;
Every drop holds life and joy
For man and woman, for girl and boy.

Verses by Winifred Stuart Gibbs, reprinted by courtesy of Our Family Food.

The Domestic Science Teacher and the Milk Campaign

By JESSIE M. HOOVER
Milk Specialist, United States Department of Agriculture

EDUCATIONAL milk-for-health work is generally conducted under the supervision of a nutrition specialist. The nutrition specialist when working alone confines her efforts to a limited number, say 100 or at least 200 individuals. But the nutrition specialist who teaches teachers multiplies her efforts a thousandfold. Such is the plan adopted by many of these workers in the extension service of the State colleges. These extensioners have learned to extend.

The educational milk campaign will serve to illustrate this point. The idea back of the campaign is that milk is an efficient growth food and that a quart of milk a day added to a varied diet promotes health and growth, and is an ideal food for the young as long as they are growing as well as being beneficial for adults having their growth. Since youth is the most impressionable age the best work is done with the young, and since one of the fundamental rules of pedagogy is "We learn to do by doing," it is believed that the best teaching methods involve the actual participation of those being taught.

There are many phases of the educational milk-for-health work in which the teachers cooperate and the pupils participate. A survey is taken, the children are weighed and measured, and their dietary habits are ascertained. Short stories are told by the teachers. The children make posters, write essays, give plays, and sing songs, and many teachers train their high-school pupils in domestic science to tell short stories about milk to the younger children.

Helpful material of this kind may be secured from the extension service of the State college. Milk-feeding demonstrations are conducted in connection with the school lunches, and records are kept of pupils' improvement in weight, conduct, and scholarship. Frequently the high-school girls conduct nutrition classes under the supervision of the domestic science teacher as a part of their course of instruction. Such was the case in one of the western states where the nine

The class was weighed aand measured without coats and shoes

senior members of the domestic science class were each given a class of six malnourished children for whom they conducted nutrition classes.

"Keep Growing" Demonstration

In a small town of one of the far western states approximately 250 children were weighed and measured and it was found, according to the table adopted by the Bureau of Education, that 54 were below normal weight. The school superintendent was amazed. There was no nurse or health specialist connected with the school system, and so he told the domestic science teacher that this was clearly a nutrition problem and therefore her responsibility. "But," she said, "I am so busy I can't undertake another thing." The superintendent replied, "You must."

This domestic science teacher rose to her responsibility. The students in her senior high-school class were tired of cooking small portions of food and studying about nutrition in abstract. They wanted to do something real and put their food study to a practical test. The teacher called her nine senior high-school pupils into conference and together they developed a plan of procedure covering a period of 18 weeks or a semester. At the close of the semester one of the pupil demonstrators said, "I never knew before that the things I had learned about foods were really so."

The plan for the demonstration was something like this. The 54 malnourished children were divided into nine groups and each of the nine senior pupils was assigned six children for her special nutrition class. The classes met once a week and the children were urged to bring their mothers. At the first and at the last meeting a local doctor interested in public health examined the children for physical defects and probable causes for their condition of malnutrition. In most cases it was found that this condition was due to improper choice of foods. In no case was it due to poverty. The mothers reported that they could not get the children to drink milk, eat fresh vegetables and fruits and cooked cereals, and sleep long hours. There was an abundance of all of these foods grown right in the county and they could be had at a reasonable price; in many cases they were grown in the family garden.

The demonstration lasted 18 weeks. The first week a class record was prepared and each member of the class of six was weighed and measured with shoes and outer coats removed and standing in the center of the scale platform. A yardstick was tacked against the door casing, beginning three feet from the floor, the inches numbering from below up toward the ceiling in order to ascertain the child's height. On the record card were recorded the following points: Name of pupil, grade in school, age (nearest birthday), height, weight, average weight for height and age, date, and answers to the questions: Do you drink milk daily? How many cups? Do you eat fresh vegetables and fruits daily? Which ones do you like best? Do you eat cooked cereal for breakfast? How many hours do you sleep?

Many other points could have been included with advantage but it was thought best to make the demonstration as simple as possible. Each child kept a notebook in which his food habits were recorded daily, and weights were taken on Wednesday of each week at the lesson, suitable records being kept. The children's heights were taken at the beginning and end of the demonstration. The four points considered were:

1. A quart of milk every day.
2. Two vegetables and fruit every day.
3. Cooked cereal for breakfast every day.
4. Ten hours sleep every day.

On school days half a pint of milk was given to the children at the middle of each session of school. This was taken from bottles through straws and was served to each of the groups of

(Continued on page 578)

Demonstrations in store windows are helpful and educational

THE STORY OF FOODS AND FOOD PRODUCTS

Supplementary Reading for Food Study Classes

The Story of Yeast

By Daniel P. Wooley
Vice President, The Fleischmann Company

Daniel P. Wooley

WHO has ever tired of bread? Young and old, rich and poor—in all corners of the world — derive ever-renewed pleasure and benefit from the daily loaf. At no time, in many centuries past, has the human palate ever wearied of this time-honored food, and at no time as in the present has science, in new appreciation of the tremendous food value of bread, taken such cognizance of the age-old saying: "Bread is our Staff of Life."

Indeed, few of us realize the wealth of body-building, health-maintaining material Nature has placed at our disposal to produce a delicious loaf of bread. Wheat, the universal food milled into flour becomes the body of the loaf, the foundation and walls of the structure. Milk, butter, sugar, water salt and shortening—all contribute their share of nutriment and goodness to the finished product. But before all these valuable ingredients can be presented to man in an edible, appetizing form, we need a most important intermediary—yeast, which may rightly be called the "Soul of Bread."

Yeast is a life-endowed agent of Nature that transforms the dough from an inert mass to a digestible, nutritious product—bread. No substitute can perform this all-important task, and at the same time impart to the loaf the particular nutrients contained in yeast; likewise no other method of bread manufacture can produce a loaf that will so appeal to the taste and satisfy the dietetic demands of the individual.

Unlike most of the larger plants known to man, yeast is not cultivated on the ordinary soil supplied by Mother Nature and fertilized artificially by man, but on another especially prepared food media indirectly supplied by Nature but arranged and governed by man.

The production of yeast today represents years of scientific research, and careful study. In the past half century, however, the joint endeavors of the biologists, research chemists and baking experts have produced a type of yeast so dependable and uniform in quality that it has made a definite contribution both to the bread manufacturing industry and thus to the public in general.

The work of the biologist and research chemist, in discovering the characteristics and properties of yeast has been no less fascinating than its actual manufacture. We must not forget that it was only in 1857 that Louis Pasteur, in cooperation with other great scientists of his day, solved the question of yeast and fermentation and developed a method for procuring a pure culture of yeast Between that time and the present, enormous steps have been taken to produce the perfected product of our day. Our biologists and chemists, then, have much to tell us of this wonderful product that works so deftly the miracle of bread.

Yeast is a live, vigorous plant, and the small cake we most commonly see is a little world of activity and life in itself. A single yeast cell seen under the microscope reveals a tiny egg-shaped organism with the amazingly small proportions of 1-3600th of an inch in diameter. About 3,600 yeast cells side by side then, would cover one inch, and the familiar little cake contains approximately 1,302,200,000 yeast plants. Well for us that these cells are so modestly tiny, for if they assumed even the size of the smallest human, we would find crowded quarters on this small earth.

The Efficiency of Yeast

Even more astounding is the power and unity of purpose with which these tiny organisms can work. It is estimated that about 8,138,000,000 of them will put their shoulder to the wheel and raise a one-pound loaf with such skill and quickness that we can learn from them a valuable lesson in efficiency.

Although the yeast plant is so minute and appears to be a simple organism, it has in reality a most complicated organic structure. Under the high-powered microscope, one can see membranes, the fine granular protoplasm, the oval nucleus, the vacuole varying in size and other important formations that make up a single cell. This small plant is composed of more than a dozen chemical elements, such as carbon, sulphur, sodium, iron, silica and chlorine, and has, furthermore, capabilities for food assimilation and respiration, as well as powers of growth and reproduction. An average analysis of the constituents of yeast reveals the following interesting figures:

	Per cent.
Proteins	14.00
Carbohydrates	10.2
Fats	.46
Mineral Matter	2.34
Water	73.00
	100.00

The protein of yeast is practically "complete." It supplements the wheat protein, supplying just those amino compounds which the wheat protein lacks.

Yeast also contains various enzymes which are indispensable in the production of the loaf, and also represents one of the most concentrated sources of Vitamin B known.

All kinds of yeast, however, are not the same, exactly as all classes of fruits or vegetables are not the same. Some are more useful than others, and we have found that the type of yeast most effective in bread-making is the one known as saccharomyces cerevisiae. Again, in this class of yeasts there are some stronger and better than others, and one of the most precious possessions of the yeast manufacturers is his select strain of seed yeast, carefully chosen and cultivated so as to develop uniformity and strength.

In order that yeast may have the energy to raise the dough, the manufacturer must supply it with the proper foods, for plants exactly as human beings, must have nourishment in order to grow, live and perform their tasks. The foods on which these tiny plants thrive are composed of nitrogenous material, fermentable sugar as well as inorganic material in the form of compounds containing potassium, magnesium, calcium, iron, phosphorous and sulphur. The conditions under which they grow must be scientifically regulated and controlled. Proper moisture, temperature and light must be insured to produce a perfect product. Immaculate cleanliness is an important element, for no foreign bacteria or yeast may by any chance hinder the process.

Only the best ingredients must be used, and experts must ceaselessly watch every step in the progress of manufacture. Thus the process as we know it today is a most exact and technical science, which demands of the producer every ounce of his resourcefulness, knowledge and experience.

According to a carefully fixed formula, a mixture of grains—rye, corn and barley malt—is prepared. All the grains are thoroughly cleansed and ground; the corn, in addition, is cooked, and the entire mixture is sent to a huge tub.

To this mixture pure culture of lactic acid bacteria is added in order to make the grain more digestible. Just as the lactic acid we drink in buttermilk has a good effect on the human body, so it benefits the yeast and insures strong and healthy fermentation. The mash is filtered and sterilized. The clear extract is then run through pipes into great shining copper tanks 20 feet high. Pure culture yeast is introduced, and the magic starts to work.

The seed or culture yeast first introduced, starts to feed on the nutrients of the grain and in about twenty minutes a tiny projection appears on its side. This projection or bud grows until it is almost as big as the original cell, and before it is mature, the first plant produces another bud. Thus the process continues until each new mature plant detaches itself and commences the process anew. During this time pure washed filtered air is blown into the tanks in order to give the yeast plants the necessary oxygen.

After twelve hours, a large amount of yeast substance is formed. The liquid is then separated from the yeast, exactly as milk is separated from cream, and the heavy yeast is sent by means of pipes through a cooling apparatus. From here it travels into a receiving tank, and thence into filter presses, where surplus water is squeezed out, and compressed yeast remains in the presses. This yeast is then thoroughly mixed, packed, placed in large refrigerators, and is ready to be shipped.

By no means does the process end here, for "Yeast Service" is as important a feature of the industry as is yeast manufacture. Baker's Yeast is a perishable food which is most carefully prepared, packed, refrigerated, and delivered. It must arrive in the bakery in the finest condition possible, in order that it may render its best service. Thus it is a particular and perhaps justifiable point of pride that every day, according to a fixed time schedule, every baker receives promptly his consignment of yeast.

Through a highly developed organization, composed of twelve great yeast factories located at convenient points in the United States and Canada, by means of thousands of motor cars operated from innumerable agencies, it is possible for the Fleischmann Company to maintain a very efficient delivery system.

The quality of the yeast, furthermore, is absolutely uniform, and extensive research work is continually being carried out along the lines of possible new developments and new ideas in yeast manufacture. Each and every cake of yeast is representative of the very best knowledge that can be commandeered for its production. No wonder then that yeast, prepared under such careful auspices, with such high ideals of service in the mind of its manufacturer, can perform so well its function as the one ideal leavening agent of bread.

Action in the Dough

When it enters the dough, yeast, brimful of energy, grows and reproduces rapidly. It attacks the sugar in the dough batch, breaks it up into carbon dioxide, and a small amount of alcohol. The alcohol evaporates by the heat of the oven and passes off, but the carbon dioxide wends its way through the dough and distributes itself evenly throughout the dough mass. The gluten of the wheat flour, because of its elastic, tenacious properties holds this gas, and the dough becomes light and porous, instead of heavy and lifeless, as it was before. This is because the little air cells we see in the finished loaf become regular, and evenly distributed, and in this way the digestive juices can act easily upon the bread we eat. A light, porous, and easily digestible loaf is the result.

Of particular interest is the work of tiny substances in the yeast called enzymes. These yeast enzymes play an important part in the action of the dough, for they are largely responsible for the conversion of the flour, water, salt, sugar, and shortening into a palatable loaf. The most important of these enzymes are:

(1) Maltase, which changes any malt sugar in the dough to a fermentable and simple sugar, such as glucose;

(2) Invertase, which also changes cane or beet sugar in the dough into glucose;

(3) Zymase, which attacks the simple sugar glucose, converting it into carbon dioxide and alcohol;

(4) A group of enzymes known as proteases, which act on the dough protein in such a way as to mellow, ripen, and mature the gluten in the flour, rendering it soft, elastic and digestible.

Briefly outlined, then, yeast has two important actions: (1) the primary action, in which carbon dioxide is developed and the dough is raised, and (2) the secondary action, in which the gluten is mellowed and developed by the activity of the yeast enzymes.

These two actions more closely examined, may really be considered as overlapping each other, for the production of carbon dioxide and the hydrogen ion concentration that accompanies the formation of this gas in the dough affects, to a great extent, the ripening changes of the gluten often attributed to the proteolytic activity of the yeast substance.

The study of colloidal chemistry is revealing to us gradually the fact that colloidal changes take place in the wheat gluten, and in time the exact causes for these changes may be determined.

Extensive research work is revealing essential knowledge concerning the permeability of the yeast cell wall, the action which takes place inside of the yeast cells and the net result of this intracellular activity. Recent investigations have shown that the yeast cells in a bread dough exert a much more powerful influence on the wheat protein and play a much more important part in the production of bread than hitherto has been realized.

The entire sum of this investigation and research will be reflected in the establishment of definite laws and theories which will materially further the progress of bread manufacture.

At the present day, when educational work is establishing the importance of food values, and their relation to a balanced diet, and when nutritive value is becoming more and more the determining factor in the purchase of foods, the manufacturer of yeast has the well-founded consciousness that he is rendering a notable sense to the public by producing a product rich in food values.

Nutritive Value

Yeast adds to the nutritive value of bread in two distinct ways. First, added to a bread dough, it contributes real food value, particularly from a qualitative standpoint. Secondly, the action of the yeast on the dough rendering it completely digestible when properly baked, increases the nutritive value of the loaf. The various secondary actions in the dough caused by the yeast develop an appetizing bread flavor which accounts for the fact that bread is the one universal standard article of the diet.

From a nutritional standpoint, bread made from a mechanically aerated dough is greatly inferior to yeast raised dough, and furthermore, does not appeal to the palate. From the standpoint of appeal to the appetite, bread made from a mechanically aerated dough, that is bread produced by the artificial injection of carbon dioxide, is a failure. From a nutritional angle, it is greatly inferior to yeast-raised dough. Although the percentage of yeast used in bread is comparatively small when compared with the amount of flour, it contributes just those valuable food elements lacking in the remainder of the dough.

The greatest source of protein in bread is the gliadin and glutenin of the flour which combine in the dough to produce gluten, that remarkable substance characteristic of wheat, which renders it above all other cereals the most valuable bread material. This wheat protein, however, is not in itself entirely complete.

We need a variety as well as a sufficiency of proteins, and yeast contributes protein substance of a different nature, supplementing in a qualitative manner the protein of the wheat.

The mineral content of yeast is especially noteworthy. If a sufficient quantity of yeast is used in bread, the criticism of the "white bread" faddists can be combatted, for yeast supplies to the loaf a good supply of phosphorous for the nervous system and calcium for the teeth and bones.

Yeast also contains a considerable quantity of glycogen, similar to the glycogen of the human liver and muscles, which is assimilated in the body, where, like starch, it serves as an energy food. The fat content of yeast, while not high, exists in an assimilable form. Nucleic acid furnished by yeast represents the chief available source of this important substance.

Yeast is the richest source of water-soluble Vitamin B in the loaf. The vitamin assists in the assimilation of starchy foods. Its main function, however, is the production of appetite, without which we could not care to eat, in spite of fresh air and exercise. Therefore the manufacture of bread with plenty of yeast stimulates the appetite, and at the same time renders the bread more delicious and wholesome.

Laboratory experiments have vividly and conclusively proved that animals deprived of vitamin B lose activity, weight and health, as well as interest in life, and become extremely rundown and nervous until vitamin B is again introduced into the diet. They will fairly beg for their daily ration of yeast until normal health and strength have entirely returned.

Physiological investigations have demonstrated that an insufficient quantity or the absence of vitamin B from the diet is the cause of general debility, malnutrition, loss of appetite and lowered resistance to disease. Beri-beri, an Oriental disease resulting from the deficiency of vitamin B in the diet of the native, may be prevented and cured by the use of a food containing sufficient amounts of vitamin B.

Thus as a "vitaminizer" of the loaf, yeast plays a vital part in distributing this valuable food element in the convenient form of bread.

The close connection between the bread industry and the general wellbeing and progress of the people of this and other countries, is keenly realized by those working in the field of nutrition. The cheapness of bread, its palatability, its satisfying, wholesome flavor, as well as its nutritive qualities conspire to keep it the favorite food of mankind. It is of the utmost importance, therefore, that every ingredient in the loaf,—flour, milk, yeast, malt extract, shortening, sugar and salt be of the finest qualities, and that the whole "ensemble" of materials be skillfully and scientificcally handled.

A distinct improvement in the quality of bread and in the process of its manufacture has accompanied the introduction and distribution of pure compressed yeast. The manufacturer of yeast has derived keen pleasure from the opportunity for service offered him, and has met his obligations so successfully that not only this country, but the entire continent can take pride in the fact that it is noted throughout the world for the high quality of its compressed yeast.

Essential Training for Nutrition Work

By E. V. McCOLLUM

Professor of Chemical Hygiene, Johns Hopkins University

THE nutrition work among children carried out during the last few years has been distinctly a salvaging operation, for it has been confined essentially to children who were obviously in need of physical improvement—under-weight children who exhibited various signs of malnutrition. These were segregated into groups and an intensive effort was made to find out the causes underlying their condition and to remove them. The children were taught all the ordinary health rules, and in addition, were either provided with lunches or were instructed in the selection of their food in such a manner as was believed would improve the quality of the diet. In no case, I believe, where a group of school children have been segregated because of evidences of malnutrition to be given special attention have other health habits than those relating to food been neglected.

We can best agree upon what the nutrition worker should know before entering upon her work if we first agree upon what it is we desire to have her do.

Inspection of any group of school children, by weighing and measuring, examination for diseased tonsils, adenoids, anemia, scoliosis, kyphosis, infections of eye, ear, nose or throat; observing whether they look tired and fall into faulty postures, or are active as is the normal child, or inactive and willing to sit still when told to do so—such inspection will disclose many defects in any public school. These and other routine tests such as chest examination, or inspection of the teeth, will always enable one to segregate the children into two groups, one classed as under-nourished, and the other as normal. The number placed in each group will depend upon the standards constituting normality that are adopted.

Any considerable number of children who are thus set aside for special attention may again be classified into two groups on a basis of whether or not they will respond with growth and improved well-being when the attention which is given is limited to improvement in the diet. A number will respond but others will not. The second group must have the attention of a physician, surgeon or dentist. After having such clinical care as they need, some will respond to good feeding better than others. The extent to which they do so will depend upon how bad their condition was when they first received attention.

Sometimes the children who are advised to submit to operative treatment for adenoids or infected tonsils actually show marked improvement without an operation if the quality of their diet has been improved. This is, of course, not to be put forward as an argument against the surgical removal of these hindrances to development. Nor does the fact that many children whose food supply is of poor quality show marked improvement as a result of clinical treatment by a physician, surgeon or dentist, justify the assertion that the character of the food is of little importance and the treatment in the clinic of paramount importance. The first mistake is frequently made by the partially trained and over-enthusiastic exponent of nutrition, and the second frequently by those physicians who know little or nothing about foods and nutrition, and are practically unaware that this subject has been greatly advanced in recent years by methods having an approximately quantitative character.

In the near future a greatly increased investment must be made in this salvaging work. It is a question in the minds of many whether it should be done by nurses, or by women who are college graduates with a training similar to that of the domestic science teacher but with special training in nutrition. I am inclined to believe that the latter are the ones who should do the work of the nutrition specialist. The school nurse now has fully as much work as she can do in the school. The prevention of the spread of epidemics will depend in great measure upon the nurse's prompt recognition of the child who is endangering the health of others.

We must not think that the nutrition worker is trying to supplant the clinic, or that she has no valid excuse for being. She represents a new feature of work in preventive medicine, and her place is to supplement the work of the clinic. Her importance in this field will be increasingly appreciated as time passes.

Sound Training Important

It is exceedingly important that the nutrition worker of today should have sound training; otherwise she is likely to make mistakes and do things which will react to the discredit of her work. The nutrition classes originated in many cases in the clinics, spread to health centers, and now have appeared in the schools where they properly belong. Here the child who is in need of special care will be under competent supervision and will be given every possible chance to develop as nearly normally as possible.

The nutrition worker has a specialty in giving individual attention to the child who is below normal physically and in planning its daily program so as to best insure its development. This makes her a teacher of a special subject which is perhaps the most important in the curriculum, viz., a teacher of the essentials of right living. In this respect she is to supplement the work of the physician, but in a different way from that of the nurse, and in a more specialized manner. Neither, it seems to me, can take the place of the other, although there may be in the well trained public health nurse all the qualifications necessary for success in either the nurse's field or that of the school nutrition worker.

The nutrition worker in the school should make a special study of the individual problems of the child who needs individual attention, and if necessary extend her influence to his home. She can often discover where the trouble lies and remedy conditions. She should come into much closer contact with the child than the school physician or the family physician where there is one. She should recognize when a physician's aid is needed and insure that it shall be provided, and specify where in many instances, it is not needed.

Perhaps a more important duty of the nutrition worker from the standpoint of the national welfare will be to present regular instruction to the group of children who are classed as normal. Generally speaking these children now get no instruction except such as they may receive in physiology. I do not mean the parrot-like repetition of a few "health chores," but an intelligent discussion of what right living is, and what it means in later life. Only a trained person, with good natural ability can be expected to accomplish this very important work.

None of these suggestions would be necessary if there were adequate medical attention for school children, but such is not now provided, and there is no immediate prospect that it will be. Medical examination of school children as at present carried out, is generally a farce. It must be so because of the small investment made in medical service and the large number of children served. There is room for the nutrition worker to supplement effectively the medical service of the public schools, by giving her enough training to enable her to direct the attention of the school physician or the family physician where it is needed, and avoid the neglect which now so frequently occurs.

In addition she should give closer attention to all the personal habits of the child, the unfortunate circumstances which may surround it at home, and correct any fault in its habits of living. Insofar as she can do so through her contact with mothers, either in the homes or through the parent-teachers association, she should seek to instruct them in the selection and preparation of food for the family, and aid in overcoming any unfortunate likes and dislikes which the child may have formed. In performing these functions she will accomplish much in improving the development of children still to come, and of younger ones not yet of school age.

Such important a work cannot be given over to untrained or half trained persons. The women who do this type of work must have enough intelligence and training to make them accurate observers, capable of using sound judgment and making deductions. For this reason they should all have a college education which is sound as a preparation for any kind of work requiring high mental attainments. Chemistry is of first importance in the training for any kind of scientific work. Some courses now in the curriculum of the departments of home economics, where the nutrition worker receives most of her special training, should be supplanted by courses in chemistry. Physics and physiology should also be studied intensively enough to give the student a knowledge of the laws of nature and the properties of matter, as they apply to physiological phenomena.

Nutrition Courses Necessary

The nutrition worker should have formal instruction in nutrition, including a study of the special properties of each of our food-stuffs, and the effects of cooking, canning, preserving, etc., upon them; the chemical nature of the essential nutrient principles; and the processes of metabolism as taught in the best courses in physiological chemistry. In addition she should have experience for at least a year in experimental work with animals. This need not involve research, but should include observations on the effects of restricting young animals to diets that are faulty in many different ways. There is nothing that will go farther toward training the powers of observation, or convincing her of the importance of the work which she is later to do with children. I believe there is no other way in which this conviction can be obtained, and in which facility can be acquired in evaluating quality in any menu which later she may have to examine. She should, also, be familiar with literature relating to observations made on man, as it relates to nutrition in normal and pathological conditions. Many young women in our colleges today are capable of the training here outlined.

Another field of usefulness for the nutrition worker with the best qualifications embraces the professional dietitian. She will work in cooperation with the physician and supplement him in a relation to his patient which is now much neglected. The pediatrician and the physician often give patients suffering from diabetes, gastro-intestinal disease, or nephritis, directions for diet which it is impossible for them to carrry out effectively in the home without close supervision. Success or failure in the treatment of such cases frequently turns upon dietetic management. A trained and tactful woman could call upon these patients at the request of the physician and advise regarding food purchases, supervise the daily menus, instruct in cookery, look after the examination of the specimens of urine where desirable, give suggestions regarding amounts of food to be given the patient, etc.

In dwelling thus long upon the nature of the work which the nutrition worker will do, and on the training necessary to prepare her for that work, the desire has been to emphasize her primary importance in the program of educating the youth how to live in order to enjoy health and be efficient.

If some one will produce convincing evidence that though many skeletal and tooth defects in children are due to causes other than improper development during prenatal life, infancy and childhood, that the human species thrives upon the same diets that leave animals mere runts or victims of specific types of malnutrition, the proposition which I have set before you will break down. Until that is done, those who do not favor such a program as I have formulated or offer a good substitute, are on the defensive.

Address given at International Health Educaton Conference, San Francisco.

A Correction

In the "Story of Condensed Milk" in the November issue the words "mixing wells" appearing in line 6, column 3 page 528, should read "vacuum pans."

AMERICA'S MOST FAMOUS DESSERT
JELL-O
TRADE MARK REG. U.S. PAT. OFF.
A MIXTURE
SPECIAL PACKAGE
NET WEIGHT 26 OZS.
MAKES FOUR QUARTS
RASPBERRY
PURE FRUIT FLAVOR
VEGETABLE COLOR
This package makes four quarts of Jell-O. Serves forty to fifty persons according to size of portion.
Dissolve the contents of the package in four quarts of boiling water and set in a cold place to harden.
If only part of the contents is to be made up at one time, allow exactly one pint of boiling water for each 3½ ounces (92 grams) of powder.
Further directions of great importance given on each of the two side panels of package. Be sure to read them.
THE GENESEE PURE FOOD
LE ROY,

You know that the Statler Hotels are famous for good food and also for efficient management. ~~~~ Well, the Statler Hotels serve several special Jell~O dishes. For greater convenience and economy, their chefs use the Institutional Package, an over-size Jell~O box put up for big users of this favorite dessert.

**THE GENESEE
PURE FOOD COMPANY**

*Le Roy, New York
Bridgeburg, Ont.*

Recipe for a Jell-O Salad on the Statler menu. It is always popular with Statler guests.

TOMATO JELL-O SALAD

Cook half can of tomatoes with few leaves of celery, half bay leaf and a small onion cut fine, for five minutes. Strain through a coarse sieve, add two tablespoons of vinegar and enough water to make a pint. Heat to boiling point and pour it over a package of Lemon Jell-O, add a dash of red pepper and salt to taste. Pour in individual moulds and when firm serve on lettuce leaves with salad dressing.

**HOTEL STATLER
BUFFALO, N.Y.**

Combat this Great Evil

Do you know what a serious menace malnutrition is? Actual figures are alarming. 6,000,000 undernourished school children right here in our own prosperous United States!

These malnourished children present a problem in which the teacher is vitally concerned. Malnutrition in school children is a foe to every teacher. Your children cannot do credit to your teaching if they are not physically fit.

Any teacher can have an important influence on the health life of her children — more so even than parents — if she will.

Start a Health and Nutrition Class

Correct food and careful attention to health habits will overcome malnutrition in time. By starting health and nutrition classes in your own school you can accomplish a great deal.

The Nutrition Department of the Borden Company will be glad to furnish you with material and help you get your classes started. More than 500 malnourished school children have come directly under the observation of the field workers of this department during the past year.

The Nutrition Department has proved by exact and scientific experiments that Borden's Eagle Brand Condensed Milk is extremely beneficial in the treatment of this dangerous condition in children.

Eagle Brand is pure whole cow's milk combined with cane sugar. It is exceptionally rich in energy producing food; it contains elements essential to health and growth. Feeding experiments show that children fed on it gained as well as those fed on ordinary bottled milk. They showed decided improvement in every way, especially in appearance and progress in school.

The material collected by the Nutrition Department in these experiments, as well as an outline of the lessons used by Borden nutrition workers themselves will be placed at your disposal free of charge. Just write to the Nutrition Director, Borden Company, Borden Bldg., New York and she will advise you. Or if you wish health literature check the following list and mail it to her.

The Borden Company,
Borden Bldg., New York, N. Y.
Please send me the literature checked.
....20 Suggestive Lessons for Nutrition Classes
....An Interesting Experiment with Malnourished Children
....The Adolescent Girl
....Keeping Your Child Fit
....Menus for Little People
....Johnnie's Adventures with the Milkarpies
....The First Milkarpies
....Height and Weight Charts
....Health Records.

Name ________________
Address

New York State Home Economics Workers Hold Interesting Meeting

At the meeting of the New York State Home Economics Association which was held in conection with the State Teachers' Association at Albany, November 26-27, the program was so arranged that many different sections could meet at the same time.

The following are the different groups with the chairmen: Junior High Schools, Emma Conley, State Department of Education; High Schools, Geraldine Gorton, Masten Park High School, Buffalo; Teacher Training Institutions, Emma Conley, Teachers College; Institutional, Laura Comstock, Eastman Kodak Company; Child Care, Lillian Bussy, Cortland Normal School; Part-Time Continuation Schools, Henrietta Brett, Part-Time School, Albany; Evening Schools, Mildred L. Sipp, Buffalo Normal School; Business and Journalism, Helen Louise Johnson, New York City; Homemakers, Mrs. William G. Lewis, Albany, Extension; Edith Barber, Home Bureau, Syracuse.

"Commercial Material Valuable to Home Economics Workers," was the subject presented at a general meeting by Blanche Ingersoll. Many samples of available material were used to illustrate the different ways in which such material may be used to good advantage in the class room and in the homes.

Miss Flora Rose of Cornell University gave a most interesting account of her nutrition work in Belgium, the detailed results of which are awaited with much interest by those particularly interested in nutrition problems.

Mrs. Helen T. Wooley, assistant director of the Merrill Palmer School, spoke on the subject, "The Training of Children as a Part of a Home Economics Program." Miss Edith Sarver, supervisor of home economics in Schenectady, and president of the association, presided at the general meetings.

The first day of the meeting was given over to visits to the schools of Albany, Troy, and Schenectady. The lunch room of the General Electric Plant at Schenectady where 1,600 men are fed in twenty minutes was of particular interest.

Miss Emma Gunther of Teachers College presided at the afternoon meeting at Schenectady at which time the following subjects were discussed: the school lunch room, the nutrition program, the commercial lunch room, and the problems of the hospital dietitian.

The Domestic Science Teacher and the Milk Campaign

(Continued from page 572)

six. After they had finished they rested for 15 minutes instead of going out on the playground. After each nutrition lesson the notebooks were examined to learn what vegetables and fruits the children liked best and these were written in one column. On the opposite side of the page were listed the ones that the mothers said the children did not like.

The domestic science teacher gave two demonstrations on the preparation of those specially disliked vegetables each month to the mothers. For example, the mothers were told that cabbage should be cooked in large amount of boiling water only a short time, say 15 or 20 minutes, until tender. The water then should be drained off, salt added and thick cream or butter used as seasoning. Other vegetables were prepared in wholesome ways and the mothers and children learned that right preparation and proper selection of foods have much to do with their palatability and choice.

Each week the children left their notebooks with their pupil teachers, who checked them carefully and gave a grade of 20 for each rule which was observed during the week. Each child who brought his mother or her representative was given 20 points, making 100 points in all, and at the close of the 18 weeks' demonstration it was a bright day when two-thirds of the members of the "keep growing" demonstration graduated with honors, having reached normal weight for height and age. In order to show graphically their increase in weight, charts were made and curves were drawn to show just how the pupils were progressing in their "keep growing" demonstration.

Teachers have found that cooking demonstrations by domestic science pupils in prominent store windows are helpful and educational. Posters are frequently prepared by pupils under the direction of the teachers as a part of the school work. These should be simple and appropriate and tell their stories so clearly as to make the reader wish to observe their message. They may be in black and white or in colors. Magazine cut-outs may be used or paper cut-outs. Crayon or paints are frequently used for expressing the message to be conveyed. Verses and essays are written, and plays telling of the benefit of milk for growth and health are enjoyed by pupils and parents. Songs have been found to be most helpful in spreading the idea of milk-for-health.

Tune—"Cheer, Cheer, The Gang's all Here."

Milk, milk, we all want milk.
Milk will make us healthy,
And with health we're
wealthy.
Milk, milk, we all want milk,
Milk brings health to one and all.

The Story of the Jelly Fish

By SUSANNA SCHNEMAYER
Kansas State Agricultural College

A GAIN of three pounds in six weeks is the record of a group of children in a Kansas school who used their back bones—for that is what it takes to learn to drink milk and eat vegetables when you don't like them, or think you don't, and to go to bed and brush your teeth and do all the other things.

During the past year a number of talks have been given to groups of school children on better food and health habits. The rules to be observed were printed on a slip of paper called the Daily Health Calendar There was a space marked off for each day in the week so that the child could mark down his credits each day and add them up for the week. A perfect record meant a score of 100 on the Health Calendar. It took a real back bone to make such a score, but best of all, good scores meant good gains in weight, fuller faces, better color, brighter eyes, in a word more health and happiness.

One little girl, Maretta Landon, gained 13½ pounds during the year, another, Lucy Mize, gained 9½ pounds. This put them safely above the average weight for children of their height and age.

These were the rules:

Brush the teeth twice every day.
Play and exercise outdoors two hours every day.
Sleep with windows open.
Take a full bath at least once a week.
Wash the hands before each meal.
Chew food carefully.
Drink at least two cups of milk every day.
Eat two vegetables every day, tomato once a week.
Eat one fruit every day, oranges once a week.
Eat breakfast food every day.
Drink four glasses of water every day.
Stand and sit erect.
Keep fingers and pencils out of the mouth.

After a short time it became apparent that in order to make the necessary changes in their habits they must have a "back-bone," so the story of the jelly fish was prepared and given them to put in their health books. It was always popular. One group, the 4th grade at Sumner School, Topeka, Kansas, wrote me about it afterwards and I had the pleasure of reading 44 letters similar to this one.

"I am writing you this little letter to thank you for telling us about the jelly fish. I am not a jelly fish. I quit eating so many sweet things. I eat healthy things. Such things as carrots, spinach, onions, tomatoes, and lettuce. I drink a quart of milk a day. My mother does some of the things. The hardest thing to do for me is to brush my teeth two times a day. I like to do best is to drink milk.

"Well, I guess that will be all."

The following is the story of the jelly fish:

Jelly Fish and Children

There are two kinds of jelly fish, those who live in the ocean and those who live on dry land. Those who live in the ocean look like a soft and wobbly lump of jelly. They have no backbone. They sit on the sand under the water and if anything floats their way, that is what they eat. They seem to use no discrimination.

Those who live on the land resemble jelly more in their actions than in their looks. Some of them live in schools—you have read of schools of fish, haven't you? Well, the school kind of jelly fish have a habit of sliding down in their seats until you would think they have no back-bone.

Then there are land-roaming jelly fish who do not live in schools. They live at home, or on the street, or up town. They resemble jelly fish because of the way they eat. Just anything, anytime that comes their way. They do not use discrimination.

Unlike the jelly fish of the ocean, they have what we call the power of locomotion. That means they can walk. And so when they meet a friend and pass a candy store or look into mother's cupboard, no matter what time of day, if there is an opportunity to eat candy or trash they eat it. They have no moral back-bone. They cannot say no. (Of course we know candy is good food if it is eaten for desert, just after a meal.)

This kind of jelly fish finds it hard to say no on other occasions also, and so he makes many mistakes and is sorry afterwards. But it is not so much a question of saying no as it is of making the right choice and doing the right thing.

There is, however, one good thing about being a jelly fish—you don't have to stay one. You can outgrow it just as you can bring up your weight if you want to. First you must WANT to badly enough, then you must FOLLOW THE RULES.

But there is only one rule, and it is a short one: EXERCISE. By sitting and standing erect you train your physical backbone to be straight and strong. By saying no at the right time, or making right decisions and then doing the right thing you straighten and strengthen your moral backbone. After a while you are not a jelly fish at all, but a healthy, strong and dependable, man or woman.

And so you see, it is not so much a disgrace to BE a jelly fish as to REMAIN one.

If—

the ingredients printed on the label of your baking powder tin include Cream of Tartar — your cakes, biscuits and other foods will be more healthful and have a finer texture and *taste.*

ROYAL Baking Powder

Absolutely Pure

is made from Cream of Tartar, derived from grapes.

Contains No Alum
Leaves No Bitter Taste

The Housekeeper a Consumer and a Producer

By LOUISE STANLEY, Ph.D.

Chief of Bureau of Home Economics, United States Department of Agriculture

Louise Stanley, Ph.D.

THE Bureau of Home Economics in developing its program has had in mind the twofold aspect of homemaking. The homemaker must produce or guide production throughout the diversified activities of the household. She also determines what the household shall consume in commodities purchased or labor hired.

Too frequently home economics is thought of as dealing only with the production side of homemaking. The homemaker's value is too likely to be estimated in terms of pies, cakes, jellies, jams—the garments she makes or the vigor and frequency of her housecleaning. There has been a failure to appreciate the corresponding importance of good judgment in deciding what to buy in order to secure health and the major satisfactions in life for her family.

The woman in the country home must always do much producing. Frequently she bakes all the bread used by the family, puts up her own canned goods, and makes or remodels much of the family clothing. We in the Bureau of Home Economics feel that in many cases we can help her in working out easier and more efficient methods of doing her work. We believe we can help not only the rural woman, but all women, by pointing out ways of reducing the time spent at various necessary tasks, so that there is more opportunity for rest, recreation, or companionship with the children.

But we also hope to help the housekeeper in choosing to best advantage what materials the family shall purchase for consumption and how she shall best distribute her own time among her various duties. A homemaker must be able not only to select foods properly in terms of protein, calories, mineral matter and vitamins, but also to know when it is better family economy to save her own strength and time, for instance, by purchasing bread rather than making it, or buying canned fruit or vegetables instead of canning them herself. She must be able to look at the expenditure of money and labor in the home from the point of view of all the needs to be met and distribute it accordingly.

Growing, as it has, out of the former Office of Home Economics, which was chiefly concerned with food investigations, the new Bureau of Home Economics will naturally build on that foundation. Studies in food selection and food preparation which were under way when this bureau came into existence are being continued and expanded. Among these studies are uses for new food materials, more economical or more healthful ways of preparing familiar foods, and methods of cooking to conserve important food constituents. Our information on these subjects is being constantly revised in the light of the newest scientific discoveries and made available to the individual housewife.

This work will continue under the new program and will embrace further studies of the economic uses of food, designed to guide the housewife in selecting the family supplies wisely and intelligently. She is being urged from all sides, through advertising and merchants, to increase consumption of many different foods, and she needs authoritative information as to how various foods contribute to the health and well being of her family.

The Bureau is particularly interested in the relation of nutrition to health. The part played by proper food in the health and normal development of human beings has been emphasized by many recent studies of the physical and mental status of school children. Surveys of this sort show the need for better distribution of information on nutrition. It is hoped that data obtained in connection with our food studies will help in improving the general nutrition of people. We need surveys which will show what people actually eat and what they pay for it. This material would serve as a basis for suggestions as to beneficial changes that might be introduced by the individual housekeeper. It would also enable us to advise those with small incomes on how to meet unusual economic situations without sacrificing the family health.

The Bureau of Home Economics already acts as a go-between or interpreter for the housewife who is unfamiliar with the phraseology of the scientific food investigator. The circulation of Farmers' Bulletins on subjects that have to do with the proper feeding of the family, stated in everyday terms, is ample evidence of the interest in, and desire for, information of this kind.

It may be worth while to note in this connection that during the year preceding June 30, 1923, there were distributed 125,000 copies of Farmers' Bulletin No. 717, "Food for Young Children"; a total of 149,000 copies of the three bulletins in the series called "How to Select Foods," and, between its issue in April, 1923, and June 30, 1923, about 255,000 copies of Farmers' Bulletin 1313, "Good Proportions in the Diet."

This past September we issued a wall-chart, showing by pictures, exactly what was meant by a 100-calorie portion of different familiar foods. The original intention was to distribute this chart to teachers and other workers in home economics, but requests for the chart have come from many different classes of people. It is said frequently that housewives are not interested in selecting foods according to calorie content, that they will not take the trouble to calculate the nourishment represented in the market basket or to assure themselves that they are giving their children a satisfactory amount of suitable foods.

Books For The Domestic Science Teacher

Include With Your Subscription an Order for One or More of These Books

THE BOSTON COOKING SCHOOL COOK BOOK

By Fannie Merritt Farmer. Price $2.50

(New Edition, Revised and Enlarged)

An authoritative guide to the study and practice of cookery. The material is so well organized and the recipes so accurate that the teacher of cookery may use the book as the very foundation stone of her library.

MARKETING AND HOUSEWORK MANUAL

By S. Agnes Donham. Price $2.00

The author's unusual breadth of experience as one of the house directors of the Garland School gives her just the right background for the preparation of a handbook that is entirely practical and suggestive.

FEEDING THE FAMILY

By Mary Swartz Rose, Ph.D. Price $2.40

Professor Rose's book has stood the test of several years' service. The subject matter is based on sound scientific knowledge, the treatment is entirely informal and popular. Teachers of foods will find it invaluable in planning diets for family use.

FOODS AND HOUSEHOLD MANAGEMENT

By Helen Kinne and Anna B. Cooley. $1.40

A clearly written discussion of the relation of foods to the economics of the household. Of interest to all teachers.

PRINCIPLES OF HUMAN NUTRITION

By Whitman H. Jordan. Price $2.50

One of the best of the shorter books on nutrition. Enriched with many helpful tables of food values, thus appealing to the teacher who builds her professional library slowly.

RECIPES FOR INSTITUTION USE

Compiled by Chicago Dietetic Assn. $1.60

A collection, each recipe of which is vouched for by a well known dietitian. Teachers interested in the underlying principles that govern quantity cooking know this book.

HOME ECONOMICS IN THE ELEMENTARY AND SECONDARY SCHOOLS

By Agnes K. Hanna. Price $2.50

A text book for students in special methods courses in colleges and normal schools. The use of specific problems for which students see the need is the basis of the book.

THE ENCYCLOPEDIA OF FOOD

Price $10.00

Stories of the foods by which we live, how and where they grow and are marketed. Their comparative values and how best to use and enjoy them.

FOOD AND HEALTH EDUCATION
37 West 39th Street New York

Getting The Best Value Out of Any Diet

In the modern search to find a natural food that would promote health by insuring more thorough digestion, science has discovered some important facts about plain, edible gelatine, of which Knox Sparkling Gelatine is the purest form.

In the first place, it has been found to have a powerful colloidal action by emulsifying or softening the food masses after they enter the stomach. For example, a little dissolved gelatine added to milk will prevent the formation of the hard curds that often cause distress.

Therefore, because of its wonderful properties in aiding digestion, Knox Sparkling Gelatine is the best possible purveyor of milk, eggs, fresh fruits, fruit juices, vegetables and other wholesome foods. And it has the further advantage of adding variety, palatability, and nutritive value to any diet.

KNOX
SPARKLING
GELATINE

lends itself readily to the preparation of numberless delightful dishes highly beneficial for invalids, convalescents, children and all those whose digestion is less than perfect.

The following is but one of the many highly nutritive desserts that are easily and quickly made with Knox Sparkling Gelatine:

GRAPE JUICE SOUFFLÉ

1 envelope Knox Sparkling Gelatine.
1 pint grape juice, sweetened.
Whites of four eggs.
3-4 cup heavy cream.

Soak gelatine in grape juice ten minutes, then heat in double boiler until gelatine has dissolved. Strain into bowl set in saucepan containing ice water, and when mixture begins to thicken, fold in whites of eggs beaten until stiff. Half fill individual mold first dipped in cold water, with mixture. To remainder add cream, beaten until stiff. Fill molds with cream mixture, and chill. Remove from molds to serving dish, and garnish with whipped cream (sweetened and flavored delicately with vanilla), candied violets and green leaves.

IMPORTANT BOOKS—FREE

The new book, "The Health Value of Gelatine," which contains a digest of the reports of a scientific investigation on the dietary value of edible gelatine, will be sent free upon request, together with two important recipe books, "Dainty Desserts" and "Food Economy."

Charles B. Knox Gelatine Co.
111 Knox Ave., Johnstown, New York

Our experience with this chart has been that housewives have formed a large group among those requesting the chart, in addition to teachers, scientific investigators and nutrition specialists. We hope to be able to issue more of the same sort of material, interpreting the facts determined by scientific investigations, in simple visual form.

The program which will go into effect July 1, 1924, lays emphasis on economic studies which will require the cooperation of many housekeepers with our research workers. We need to know what proportions of the family income are being spent for food, clothing, furnishing, and upkeep of the house, recreation, educating the children, and other drains on the family purse. Some of this information will be useful to other bureaus of the department in working out the consumption demands of the home maker. It will serve also as a basis in guiding production.

For instance, if we find that the average home studied uses so many pounds of butter annually per individual, or so many sacks of flour, that would give a basis on which to estimate the need for these products in a community, and on a national scale. Information on the consumption of various necessary commodities would also prevent over-production and bring about better distribution of products for home use.

The best use of a woman's time in the home, judged from evaluation of different tasks in accordance with wage rates, may be quite different from her own ideas on the subject. It may prove to be less important for her to bake pies than to save sewing costs by her own labor, if the rate is high for the kind of sewing she can do. The work of the home can not be established on a business basis, unless we know the wage value of each kind of household activity. The thought here is not that a woman should be paid wages for what she does in her home but that where there is a choice of tasks she may make advantageous use of her time.

The Bureau of Home Economics hopes, by means of field surveys, cooperation with large women's organizations and with economic workers, to establish what these values actually are, and through them to help the housewife make the best contribution possible to the family welfare over and above her intangible contribution which can not be given a monetary value.

Other studies will be concerned with the factors entering into clothing costs the cost of housing, experiments in the field of textiles and clothing, and the selection of household equipment. We intend to undertake problems in the order of their relative importance so far as we are able to determine it, and look to the women of the country for some expression as to the fields in which research is most needed and desired.

Suggestions to Teachers Regarding Sources of Material

Editor's Note—To assist teachers in obtaining material published by manufacturers of foods, school equipment, etc., the editors of Food and Health Education will gladly forward requests from teachers to these manufacturers. Some of the material available in printed form is listed below, each publication being given a key number. For convenience in ordering the teacher may use these numbers and may select any one or more of the publications she desires, simply sending the order to this magazine, which will forward the requests to the companies. The material presented herewith has been carefully selected after review in this office, it being our aim to recommend only fresh material which meets professional standards both as to scientific accuracy and educational adaptability.

1. **"Bread Facts."** A 100-page book planned primarily for the manufacturer but carrying considerable material that is likely to prove helpful to the teacher. A description of "the perfect loaf"; the chemical composition of bread; the story of wheat, are among the topics treated.

2. **"Baking Technology."** A 30-page magazine, published monthly. Contains much that is helpful on the application of science to the problems of the baking industry. The teacher of domestic science will find various suggestions for use in the class room. Among these are digests of current material on nutrition articles on hygiene suitable for supplementary reading, etc.

4. **"A Revolution in the Kitchen."** Informal and popular discussion of the art of canning as it ministers to the housekeeper's convenience. Valuable supplementary reading for junior high school work on domestic science.

5 **"Food for Growing Children."** A thoroughly up-to-date discussion of the food value of oatmeal in its relation to the well rounded dietary.

6. **"The Better Table."** Illustrated recipe book, featuring oatmeal, self-rising flour and wheat preparations, but including rules for cakes, desserts and confections.

7. **"Feeding the Child for Health."** A good example of how progressive manufacturers are adapting the facts in science to their own educational publicity. Fruit and its place in the diet is the central point of the discussion.

8. **"Vitamines—Their importance in the Diet."** A pamphlet featuring the relation of lemons and oranges to a balanced diet.

9. **"Busy-Day Salads and Desserts."** An illustrated recipe book giving directions for the preparation of fruit salads and desserts.

10. **"Dainty Desserts for Dainty People."** A pamphlet illustrated in colors giving recipes for salads, savories and desserts made from gelatine.

11. **"Grape Juice as a Therapeutic Agent."** A popular treatment of the story of grape juice, together with recipes for the preparation of various beverages and invalid dishes.

12. **"Make It Better with Leaf Lard."** Small pamphlet giving general directions for frying as well as recipes in which leaf lard is used.

13. **"Meat Cookery."** A pamphlet giving recipes for meat dishes, colored plates showing different cuts, desirable food combinations, and hints on economy in purchasing meats.

14. **"Facts About Meat."** A collection of comments from various specialists on the place of meat in the diet.

15. **"The Magic of Milk."** More than 100 recipes for the preparation of dairy dishes and milk beverages.

16. **"Ye Early History of Tea."** A beautifully illustrated pamphlet, giving a brief history of the discovery, use and preparation of tea.

17. **"The Story of Compressed Yeast."** A brief account of yeast, what it is, how it is manufactured and the part it plays in breadmaking.

18. **"Food Source Map."** Wall map in colors, showing geographical sources of the principal foodstuffs produced by the United States.

19. **"Production of Powdered Milk."** Wall chart showing process used in commercial preparation of powdered milk.

Editor's note: Booklet Number 20, as listed in Food and Health Education for April, 1923, under the title "Bee Brand Manual of Cookery" is distributed at a cost of 50 cents per copy. We have been asked, however, to announce that the company publishing the book will be happy to make a special price for domestic science teachers of 25 cents per copy. The recipes include specialties of Southern cooks and have all been tested by a graduate of Cornell University.

21. **"Educational Material"** furnished by the National Dairy Council. A twenty-page pamphlet showing posters, films, tags, booklets, buttons, pins, plays and exhibits. Illustrated, with price list of all material.

22. **"The Vitamine Doctrine and the Oleomargarine Industry."** By William D. Richardson. Scientific paper on an interesting subject.

23. **"The Food Value of Oleomargarine."** A popular interpretation of the chemical composition of oleomargarine.

24. **"Storing Canned Foods in the Open Can."** A practical paper by a well-known chemist.

25. **"Modern Biscuit Baking."** A monograph prepared by a home economics department. A 16-page pamphlet, containing

discussion of material used in biscuit making, directions for handling, recipes and score cards.

26. **"Modern Cake Baking."** A monograph uniform in series with the foregoing.

27. **"Reliable Recipes."** A 75-page cook book prepared by the domestic science department of a large baking powder company. Recipes include directions for preparing all dishes in which baking powder is used. Material is well arranged.

28. **"Food Economy."** Recipes for leftovers and plain desserts. A valuable pamphlet on the use of gelatine.

29. **"Bread and ——."** An illustrated booklet, describing the manufacture of oleomargarine, together with recipes and directions for preparing attractive dishes in which the product may be used.

30. **"One Dish Hot Meals For Rural Schools."** Carefully tested recipes prepared by the domestic science director of a large packing company.

31. **"A Six Weeks' Sequence in School Lunches, Suitable for Schools of 100 to 300 Pupils."** Well organized material on the development of a series of school lunches. Menus and recipes.

32. **"Educational Meat Charts."** Colored charts of convenient size, with a side of beef, lamb, etc., pictured entire, with the different cuts shown graphically, both singly and in relation to the animal.

33. **"Coffee From Tree to Cup."** A series of illustrated cards forming an educational exhibit. Price 50 cents.

34. **"Medal Cook Book."** A carefully prepared cook book, giving directions for all the standard cookery processes with special attention to those dishes requiring flour mixtures.

35. **"Height and Weight Tables For Boys and Girls."** Arranged from Dr. Woods' tables. Cards giving normal weights for both boys and girls. Published by Food and Health Education of The American Food Journal.

36. **"The Dietetic Advantage of a Digestible Cooking Fat."** A 2,000-word lesson paper prepared by an expert for a large food products company, with comparisons of various fats as to melting point, digestibility and food value. Good supplementary reading for the class room.

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Miss Anne E. Fairlie, Wentworth Public School, Hamilton, Ontario, received the second award.

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Miss Hazel L. Sterns, Department of Education, Regina, Sask., who received the third award, brings out an interesting point on economy.

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Control of Milk Pasteurization

By RUSSELL S. SMITH

Dairy Division, United States Department of Agriculture

THE problem of proper control of milk pasteurizing is receiving increased attention as the process becomes extended. Not so long ago milk dealers and health officials in general were loath to regard the pasteurization of milk with much seriousness. This was no doubt due to the lack of uniformity in temperature of heating and in the kind of equipment used as well as lack of confidence. This lack of confidence may have been due to the general use of the flash process of pasteurizing (the milk was heated momentarily to some temperature near 160 deg. F.), and the tracing of an epidemic of septic sore throat to a dairy using the flash process. Inadequate and unreliable pasteurization was responsible for that epidemic.

Such occurrences are in a certain sense fortunate for the dairy industry as it has been possible to profit by such mistakes. Flash pasteurization is fast disappearing and we now hear a great deal about proper and positive pasteurization. The generally accepted modern meaning of proper pasteurization is understood to be the holding of every portion of the milk at a definite temperature for a definite period of time, followed immediately by cooling to a temperature unfavorable to bacterial development.

It has been interesting to trace the growth of pasterization over a period of years and to see that it has grown rapidly in favor.

Table I shows the expansion of the process from 1915 to 1921:

There is an increasing tendency following increase in population for cities to have pasteurized milk and also to have a higher percentage of the supply sold as pasteurized milk. This is shown in Table II.

With increased population and increase in pasteurization we would naturally expect an improvement in the control of the situation but let us see what has occurred.

Systematic supervision of milk supplies has been most highly developed in the larger cities which draw from wide areas for their supply. This supervision is generally carried on as a part of the division of foods, while in smaller cities, less than 140,000 population, it is handled either by the health officer himself or by a subordinate under his direction. When it comes to the question of supervising pasteurization the city health official having no bacteriological laboratory is handicapped.

In such instances there has been a tendency to allow pasteurization to replace the former system of supervision, which consisted chiefly of dairy farm inspection. That trend became noticeable several years ago when the New York City health department sought an appropriation for 35 additional dairy farm inspectors but the appropriation was not granted. It was at first thought that inspection of pasteurizing plants by Health Department inspectors would be of more value than visits to the thousands of dairy farms and that the inspection of these farms by milk companies' inspectors would suffice. However, after a little more than one year it was considered advisable to return to the previous system and the 35 additional dairy farm inspectors were wanted for that reason. This experience, or rather experiment, revealed the too often disregarded basic facts that pasteurization of milk is not a remedy nor a cure-all, and that it does not overcome the delinquencies to which milk has been subjected previously.

Any system of supervision or control of pasteurization must also consider the supervision of the conditions underlying the production of milk which is to be pasteurized, for the points for improvement are usually found there rather than in the pasteurizing process.

Milk is heated and held at a certain temperature for the sole purpose of killing specific germs or bacteria in raw or unheated milk which, when present, are undesirable and possibly dangerous.

Ordinary Conditions

Under ordinary conditions surrounding milk production the milk is exposed to many sources of bacterial inoculation. When conditions favor growth of this inoculation the multiplication is usually rapid and therefore, under such conditions, a relatively small bacterial inoculation from the interior of the udder of a cow may be passed over lightly as being of little importance. However, if we are to become thorough in our efforts we must go beyond the ordinary, and when we do this the inoculation from the interior of the udder becomes of real significance. If the udder of a cow be badly infected, milk with a low bacterial count can not be expected even though every precaution has been taken to keep out dirt and to keep

Table I—Extent of Pasteurization of Milk in Cities in the United States in 1915 and 1921

Population of cities	No. of cities answering		More than 50 per cent pasteurized		11-50 per cent pasteurized		0-10 per cent pasteurized		No milk pasteurized	
	1915	1921	1915	1921	1915	1921	1915	1921	1915	1921
			Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
More than 500,000	9	12	77.8	100.0	22.2	0.	0.	0.	0.	0.
100,001 to 500,000	40	42	30.0	90.5	50.0	9.5	15.0	0.	5.0	0.
75,001 to 100,000	19	15	26.3	73.3	42.1	26.7	21.0	0.	10.6	0.
50,001 to 75,000	30	34	13.3	67.7	50.0	14.7	20.0	2.9	16.7	14.7
25,001 to 50,000	78	62	16.7	59.7	39.7	25.8	15.4	3.2	28.2	11.3
10,001 to 25,000	168	126	6.0	33.3	23.8	18.3	10.7	9.5	59.5	38.9

the milk at low temperature afterward.

The numbers of bacteria in normal udders very greatly and standard methods of counting bacteria provide a medium which is limited in its functions. Other media under changed conditions may be better adapted to certain types of bacteria which do not grow on standard media. By changing media and conditions it has been found that while the milk from udders of many cows contains only very small numbers of bacteria, a relatively large proportion of cows give milk which contains hundreds and even thousands of bacteria per cubic centimeter.

Table II—Proportion of cities having pasteurized milk and average per cent of their milk supply which was pasteurized in 1921

Population of cities	No. of cities reporting pasteurized milk	No. of cities with no pasteurized milk	Per cent of cities with pasteurized milk	Average per cent of milk pasteurized
More than 500,000	12	0	100	95
100,001 to 500,000	42	0	100	72
75,001 to 100,000	15	0	100	68
50,001 to 75,000	29	5	85	65
25,001 to 50,000	55	7	89	58
10,000 to 25 000	77	49	61	51
Less than 10,000	36	52	41	53
Total	266	113	...	...

Bacteria which actually live and multiply in milk ducts and cisterns are limited almost entirely to three groups, as follows:

1. Micrococci
2. Bacteria of the abortus type
3. The streptococci

It has been properly stated that since pasteurization offers the only safeguard for milk not produced under ideal conditions and from tuberculin-tested herds and the only absolute guarantee against disease even in high-grade milk, it is urgently needed that official regulations be made to conform with modern knowledge more closely than is the case at present. Furthermore, pasteurization should be carefully defined, and should be coupled with intelligent inspection at the source and competent supervision at the milk plant, to insure protection. Only a few of our cities studied (about 12) have systems of this kind at the present time.

Cities Adopt Regulations

An increasing number of cities are adopting uniform rules and regulations governing pasteurizing, and the problem of control is gradually being confined to the actual supervision of the process. Therein lie numerous difficulties requiring intelligent supervision and a thorough knowledge of the primary object of pasteurization with the bacteriological principles involved. The primary object can be accomplished by heating all the milk to 145 deg. F. and holding it for a period of 30 minutes. It is then only necessary to cool the milk immediately over a surface cooler which is bacteriologically sterile, thence through a sterile bottle filler into sterile bottles which are capped with sterile caps.

After the bottles are filled they should be placed in a cold room for delivery to consumer as soon as practicable and within a few hours if possible. The process may sound relatively simple, yet problems are encountered at every step which may defeat the primary object.

Heating all the milk to 145 deg. F. involves construction of apparatus and automatic or hand control of valves. There should be a certainty that operators who are in personal control are efficient in order that the mechanical possibilities and the automatic controls can be efficiently directed. In this connection it has been suggested that the licensing of proven efficient operators might result in better control of the pasteurizing process.

Unfortunately not all types of equipment qualify their advertised efficiency, and it has been noted that widespread advertising and sales have in some instances resulted in the manufacture of similar inefficient equipment for competitive sale only, the competing manufacturers well knowing the shortcomings of that type. This is fortunately not the general case, however, as most equipment manufacturers are striving for success with equipment of merit and their engineers are keeping well abreast of the industry in that respect.

Thermostats controlling heat and temperature recording thermometers are valuable only when they are efficient. Operators often depend entirely on such control and records during the pasteurizing process, and it is essential that such instruments be of unquestionable accuracy. Discrepancies are liable to occur between the temperature recorded on a recording thermometer and the actual temperature of different portions of the milk. In this regard our knowledge is limited. The actual temperature to which every portion of the milk is heated and the actual time all of the milk has been subjected to certain temperatures, are subjects for further study and we can perhaps look head for this much needed basic information. Surely such an important process as pasteurization must be based on actuality in order that its control may be made proper.

Assuming that the process of pasteurization conforms to all of the present day rules and regulations and that the milk is ready to be cooled, we must be concerned with the conditions of things bacteriologically if results are to be insured. Coolers, bottle fillers, bottles, and bottle caps must be bacteriologically clean and above all it is essential to protect the pasteurized product from coming in contact with human hands or with any surface which, after sterilization, has been touched by the hands.

The hands of milk handlers constitute, perhaps, the most dangerous source of reinfection in a milk plant, for they may convey pathogenic organisms. Through inocculation from such sources milk may be contaminated by carriers of many diseases. Frequent medical examination of all employees exposed to uncovered milk contact surfaces, and elimination from the plant of all diseased persons or carriers, is an essential guard against trouble from that source.

Pasteurization Essential

Without intending to paint a discouraging picture I desire, as briefly as possible, to set forth, why, to my mind, raw milk and cream should be pasteurized and why control of pasteurization is essential.

Recently the bureau of preventable diseases of the New York City Health Department reported interesting activities in regard to food handlers.

In the course of one year in the Manhattan occupational clinic alone 32 cases of active pulmonary tuberculosis and 18 inactive cases were discovered. In Brooklyn 4 active and 93 inactive and in Queens 2 inactive cases were discovered. In addition 15 active cases of syphilis were found in Manhattan and 76 inactive cases in Brooklyn. Also 5 typhoid carriers were found in Manhattan and 2 in Queens. These cases of food handlers may not have been associated with milk plants but their discovery gives an idea of the desirability of disease preventative measures.

In the spring of 1922 in Austin, Texas, there was an epidemic in which 52 cases of diphtheria out of 71 were traced to infected milk. Of the 52 cases over 80 per cent were in adults. The infection was traced to a milker who had worked at two different dairies and whose nasal passage membrane was teeming with an unusually virulent diphtheria organism which was transferred by the hands onto the teats of the cow and thence into the milk.

A recent instance of the upholding by the court of an ordinance requiring a health certificate of persons working in food establishments, was recorded in Dallas, Texas. The court of criminal appeals of Dallas rendered a decision against a proprietor of a meat market who appealed from a conviction because of violating the city ordinance, requiring any person who works in a food establishment a health certificate showing that such person has been examined by a reputable physician and found free from any communicable disease.

This ordinance is similar to those in many cities in this regard and with the medical inspection of milk plant employees advocated, this test of the law in Dallas may be of interest. Such laws and precautions seem necessary if we hope to keep down human infection among food handlers. The prevention of even one epidemic similar to the one occurring at Austin, Texas, Texas, would make such precaution worth while.

The guarding of public health against infection of human or bovine origin is a public duty and justifies vigorous and energetic methods. Fines and penalties are of doubtful value when compared to results possible by a proper understanding between cattle owners, milk plant owners, and law enforcement officials. Both must think of every step in the process of milk pasteurization in terms of bacteria and health protection in order that proper methods and supervision will ensue.

Recommendations

In conclusion I do not believe I can express myself relative to the control of pasteurization in any better way than to quote some of the recommendations in a special milk committee report which was made at the Buffalo, New York, meeting of the Central Atlantic States Dairy Food and Drug Officials Association, June, 1922. In that report is was recommended:

1. That pasteurization of milk shall be performed by a process whereby every portion of the milk is raised to a temperature of 145 deg. F. and retained at that temperature for a period of 30 minutes and immediately thereafter cooled to a temperature below 50 deg. F.
2. That no pasteurizing equipment shall be used that is not approved by the health officer.
3. That each pasteurizing apparatus shall be equipped with a time and temperature recording apparatus approved by the health officer. The records shall be kept on file at the pasteurizing plant.
4. That all pasteurized milk shall be plainly marked on each bottle cap or other container in which such milk is delivered to consumers, with a label bearing the inscription "Pasteurized Milk" together with the day of the week on which said milk has been pasteurized and the name of the pasteurizing plant.
5. That immediately after the process of pasteurization and cooling, the milk must be put into the final container unless it has been pasteurized in the container in which it is delivered, in a manner satisfactory to the health officer.
6. That milk, shall not be pasteurized more than once.
7. That pasteurized milk shall be delivered to the consumer not later than 36 hours after pasteurization.
8. That all cream and skim milk shall be pasteurized, or made from pasteurized milk.
9. That buttermilk shall be made from milk or cream pasteurized before churning.
10. That all persons now employed or before being employed in the handling of pasteurized milk, or the apparatus with which such pasteurized milk comes in contact, must furnish a certificate of health to the health officer as often as required; such medical examination as is necessary shall be made without charge by the city physician, or it can be made by any reputable physician. Such examination must include that for tuberculosis, venereal diseases, typhoid fever, diphtheria and other contagious diseases that may be transmitted into the milk supply.

Manufacturing Methods in the Margarine Industry

By A. D. HENSS

Armour and Company

THE human body for its normal growth and maintenance requires a certain amount of fat in the diet. The form in which this fat is taken depends to a great extent on environment. The Eskimo eats the walrus blubber pure. The Southern European consumes large quantities of pure olive oil, and the man of the tropical countries obtains his fat requirements through the consumption of the various oil bearing fruits and nuts. In the temperate zones, which are particularly adapted to the raising of live stock, it is only natural that milk should constitute the source of a considerable amount of the fat consumed, and that the inhabitants of these sections of the world should demand that the fat they use as a spread for bread should carry the delicate flavor of milk.

In view of this fact, more attention will be given in this paper to the care and handling of milk than to any other phase of the process of manufacturing margarine.

Value of Milk

The value of milk to the margarine industry lies in its ability to impart flavor. It is true that a certain amount of moisture from the milk is incorporated in the margarine, but this could be done with water, and water is much cheaper than milk. True, also, that certain milk solids such as casein, lactose and fat are incorporated in the finished product, but the value of these computed as margarine would not pay the cost of the milk.

It would be impossible to estimate in actual money the value of milk to the margarine industry as it is purely a merchandising value. Undoubtedly some margarine would be consumed if the milk flavor were absent but the amount would be small. It is a method of appealing to the taste of those who demand the milk flavor in the fat they use as a spread for bread.

It is of particular importance when there is a narrow margin between the selling price of margarine and creamery butter. As this margin becomes less, our competition from creamery butter becomes keener, and the value of the milk flavor becomes proportionately greater. Were it not for the milk flavor, margarine would be in the same class as shortenings and would be used only for cooking purposes, except perhaps in isolated cases of those who through force of econmic circumstances were compelled to use meat drippings or other low priced fats as a spread for bread. In countries where there are large populations in the peasant class whose purchasing power is very limited, the value of the milk flavor to the industry would not be so high, as this class would be compelled to use margarine.

Another measure of value is the difference in market price between margarine and lard compounds, because if it were not for the milk flavor, our product would be forced to compete with a much cheaper product instead of a much higher priced one as is now the case.

In fact, however, the question does not resolve itself into a comparison of market values. This flavor is invaluable to margarine. It is the very life blood of the industry and if this industry lives and thrives, we must bend every effort toward the safeguarding of the milk, the development of the flavor and the conserving of that flavor until the margarine has been consumed.

Handling the Milk

Milk is probably the most sensitive of all food products. It very readily absorbs foreign flavors from the surrounding air. It reflects undesirable flavors and odors peculiar to certain feeds. It is an ideal medium for the growth of bacteria, particularly those types prevalent around stables and in feeds.

As its ability to impart a clean desirable flavor to the margarine depends to a great extent upon the care the milk has had, as reflected in its quality, it is important that extreme care be exercised at all stages in its production and processing. The first responsibility in furnishing quality milk lies with the producer. The milk should be drawn under conditions as clean as possible. The cow's udder and flanks should be kept clean and the hair kept clipped. Failure to do this means the introduction into the milk of particles of manure, bearing intestinal bacteria, and resulting in gassy milk and undesirable flavors and odors.

Cows should not be fed just prior to milking, that is, if they are fed in the same room in which the milking is done. Where silage or other fermented feeds are used, the odors remaining in the air will be absorbed by the milk and will be easily discernible in any product made from the milk while if dry feed is used, dust from the air will settle into the milk carrying with it undesirable bacteria, mold and yeast spores, which are a possible source of endless trouble for the dairy manufacturer.

One of the most important operations in the proper handling of milk on the farm, and possibly one of the least observed, is the cooling of the milk immediately after it is drawn. It is impossible except in rare cases to draw a sample of sterile milk from a cow. There are certain types of bacteria which are normal inhabitants of the cow's udder, and in addition, bacteria are constantly gaining entrance to the milk while it is being drawn. Milk is an ideal medium for the growth of most bacteria and body temperature is the optimum temperature for the growth of most of those, particularly the undesirable putrefactive types. It has been shown that under optimum conditions, a bacterial cell will divide in 20 minutes, thus a milk with a bacterial count of 30,000 per cubic centimeter when drawn, if held at a high temperature might in two hours' time show a bacterial count of between one and two million, and its power to produce a clean dairy product be lost.

Ice is a rare article on most farms, but there are few dairy farms who do not have a sufficient supply of water of a temperature low enough to bring the temperature of the milk to 50 deg. F. or lower. While 50 deg. F is not low enough to carry the milk for a great length of time, yet it is sufficiently low to arrest bacterial growth until the milk is delivered to the milk station, where it is pasteurized or cooled to a lower temperature.

Flavors in Milk

A very serious trouble, over which the producer has little control is that of disagreeable flavors in the milk caused by certain weeds. This is usually prevalent in seasons of short rainfall when due to lack of grass, the cows are obliged to eat weeds. These weedy flavors often become so pronounced that margarine makers are obliged to have milk shipped in from distant points or resort to the use of powdered milk until the condition is corrected. While such a condition is only local in character, yet it is very serious, causing much trouble and worry to the producer, manufacturer and consumer.

Much effort has been put forth in recent years to educate the farmers to the production of clean milk. Dairy organizations, farm journals, agricultural colleges, philanthropists and medical milk commissions have all joined in the effort to raise the quality of the nation's milk supply, and a marvelous good has been accomplished. A great many of our cities have passed ordinances, providing that all milk shipped in must either be from certified dairies or be pasteurized and come under certain stipulated limits as regards the bacterial count.

Effect of Education

These efforts have done much to improve the quality of the milk and consequently to lessen the troubles of the dairy manufacturer. The day is past when the milk man in the margarine factory must test and analyze each day's milk for the purpose of deciding on his method of handling. He can today, work out a desirable method of operation and follow it, and rest assured that due to the uniformity of his raw material he will secure a uniform quality in his finished product.

The milk distributor also has his responsibilities in the production of quality milk. It is in his plant that the milk is received from the farm, pasteurized, cooled and then delivered to the margarine factory, and his operations should be carefully controlled.

The Boards of Health of a number of large cities require the milk used or consumed within the limits of those cities be pasteurized in accordance with certain established specifications. These regulations do not, however, apply to milk produced by certified dairies. Such rules as these should be in force wherever milk is sold for human consumption. There was a time when the advisability of enforcing pasteurization was seriously questioned; its opponents maintaining that it could easily be used as a cloak to conceal poor handling. Such an argument is not recognized today as it is well known that pasteurization will not make good milk out of a product which has become bad. However, all raw milk is potentially bad and pasteurization will keep it from becoming bad. With the best of treatment, under our present system of distributing and handling, much of our milk would become unfit for commercial use or consumption as milk were it not for pasteurization.

Aside from the obligation which we have to the industry to produce a quality product, we as manufacturers should recognize the obligation to consumers of margarine to supply them with a product free from the danger of carrying infectious diseases. Dairy products have, in the past, been common carriers of disease germs. Epidemics of typhoid, septic sore throat, scarlet fever, and infectious intestinal disorders have been traceable to dairy products. Pasteurization is the only corrective and it is a positive one. In New York City the deaths per 100,000 population during the summer months was reduced in eight years time from 12.04 to 3.80 by enforcing the pasteurization of milk.

The method of pasteurizing is to a great extent a matter of opinion. Some operators prefer the flash method which consists of instantaneously raising the temperature to 180 deg. F. followed by immediate cooling while others use the holding method, increasing the time of holding at the maximum temperature by one minute for each degree of decrease in the maximum temperature. A common time and temperature used is 30 min at 150 deg. F. followed by immediate cooling. The important thing is that the milk should be pasteurized and it should be done efficiently.

The milk should be pasteurized in the milk station; then with proper handling it should reach the margarine factory in good condition and repasteurization should not be necessary. However, the Bureau of Animal Industry requires that in plants under their inspection the milk must be pasteurized in the plant.

On its arrival at the factory the milk should be subjected to rigid tests, chemical, physical and bacteriological. Each can should be subjected to the physical inspection, as one dairy can or cover will contaminate an entire vat of milk. A bacteria count alone will not indicate the manner in which the milk has been handled, but with a physical test for quality and an acid determination, the past history of the milk may be clearly revealed. These precautions are not for the purpose of working out a method of handling the milk, but to assure the milkman that the milk has been properly handled, and that it is in good condition for the ripening process.

The ripening of the milk requires a master hand. The operator should be a man of experience and ability. The ripening process is more than a fermentation of the milk sugar resulting in a development of lactic acid. Lactic acid is odorless and almost devoid of flavor. It is the by-product of the fermentation which give to the margarine the rich though delicate flavor which we value so highly.

Bacteriologists have demonstrated that all good starters contain two types of bacteria, one which converts lactose into lactic acid, and another which converts the lactic acid into citric acid and other organic compounds which have a high aroma and flavor. Hence the development of flavor cannot be measured by an acid determination. It depends on the kind of starter used, the amount of starter introduced into the milk, the temperature of ripening, the rate at which the acid is developed in the milk.

In working out his method of ripening, the milk man must take into consideration all of these points. The acid test, though it is not a measure of flavor or aroma, is a useful and necessary part of the operation. No man can consistently tell by his sense of taste the amount of acid developed in milk. In these days of efficiency and positive chemical and mechanical control of operations, the use of rule-of-thumb methods is inexcusable. There are on the market at the present time many kinds of materials and equipment for determining acidity, and these are so manufactured and standardized that any person of average intelligence can operate them.

Mould and Rancidity

While the degree of acidity in the milk is by no means a measure of the flavor and aroma developed, yet its determination is one of the most important operations in the manufacturing of margarine. The elimination of mould and rancidity, the bugbears of the margarine industry, is to a great extent in the hands of the milk man, through his regulation of the acidity of the milk. It is impossible under factory conditions to manufacture a margarine entirely free from mold spores, hence the necessity of making a product in which these spores will not germinate.

In the propagation of molds in the laboratory it is necessary to inoculate them on media with a high acid content. Experiments have shown that sweet milk or milk which is just slightly sour to the taste will not mold even though it is heavily inoculated with mold spores, while milk with a high acid content will, if inoculated, mold within a few days. Much of the so-called mold trouble in margarine is not due to mold spores, but to various forms of yeast. These, however, are just as undesirable and troublesome as the molds, as many of them are pigment producers, which cause the formation of various colored spots in the goods. These yeasts likewise require acid for their growth, and their fate is also to a great extent in the hands of the milk man.

While rancidity is not always associated with a moldy and yeasty condition, yet they should be considered together, as conditions which promote the growth of molds and yeasts are also conducive to the production of rancidity. There is present in practically all samples of milk a low form of plant like known as Oidium Lactis. While always present in milk, it will not grow except in the presence of a fairly high degree of acid. Investigators have found that the keeping qualities of various samples of creamery butter in storage depended to a great extent on the number of Oidia and yeasts present when the butter was manufactured. There was found almost a direct proportion existing between the organism count and the life of the butter before it became rancid; samples showing a high organism count being proportionately short-lived, and vice versa. Control and regulation of acidity will aid materially in preventing the growth of these organisms.

These statements are not intended to minimize the importance of cleanliness in all parts of the factory. If, though the milkman were doing his part, there were places in the factory where mold was growing and fresh virile spores were constantly gaining access to the product, there would be danger that these spores would grow and cause trouble, even though conditions were not favorable for growth within the product.

Selection and Care of Oils

The selection of oils plays an important part in the flavor and keeping quality of the product. All oils used in the manufacture of margarine should be as neutral in flavor as it is possible to make them. Certain flavors peculiar to fats and oils used in margarine, such as the peanut flavor in peanut oil and the cocoanut flavor in cocoanut oil, are not objectionable in themselves, but margarine is a dairy product in which the predominating feature should be the milk flavor, and it should not be masked by other flavors present, however pleasant or desirable they may be in themselves.

While the undesirable changes brought about in milk are either bacteriological or mycological in character, those occurring in the fats and oils are purely chemical, as these products do not constitute a favorable food for bacteria, yeasts or molds. When the oil foreman has assured himself by rigid inspection that no inferior oils gained access to the factory he has only to guard against extremes in temperatures, undue exposure to air and light. Oleo oils are particularly susceptible to extremes in temperature, either an extremely high or extremely low temperature producing rancidity within a comparatively short while. Exposure to light and air also produce rancidity in most oils even where temperature conditions are satisfactory. When the foreman is satisfied that none of these conditions exist he has done his part toward producing a quality product.

Manufacturing Processes

The quality of the finished product is largely determined by the handling and processing of the oils and milk; the body and texture principally by the subsequent operations, churning, crystallizing, tempering and working.

The object in churning is to produce from the oils and milk an emulsion sufficiently complete that a desirable amount of moisture is retained and the loss of milk in the crystallizing processes prevented, but not so complete as to injure the body and texture of the product. Over-emulsification results in a sticky body and the incorporation of a considerable amount of air in the product. In churning natural color margarine it also produces a bleaching effect through the incorporation of air.

Various methods of crystallizing the emulsion are in use. In America water crystallization is most generally used. Some operators prefer the combination spray and flume system where both crystals and water are discharged into a truck, and the water allowed to drain away. Others prefer a system where the emulsion is crystallized in a tank of ice water, then dipped out into trucks. The former method is less laborious and more sanitary than the latter, but is more extravagant in the use of water and refrigeration.

A great many of the European factories have adopted the use of the lard roll or drum for crystallizing the emulsion. Its proponents claim for it economy of labor and refrigeration, higher yields, and that it conserves the milk flavor. The economy of operation is evident though the claims for greater yields and higher milk flavor would be open to question.

The tempering process, while used extensively in this country, is not in general use in Europe. Probably because of lighter saltage used in those countries the operators do not seem inclined to allow the crystals to stand at a temperature which promotes the growth of bacteria but make an effort to get it under refrigeration as soon as possible after the churning process. The tempering room, if not carefully watched, may be a source of trouble. Tempering too long, or at too high temperatures, or unclean air, may cause the product to deteriorate rather than improve by tempering.

The Working Process

The working process as it is carried on in most factories is not entirely satisfactory. The rotary table worker, which is in general use, is not sufficiently positive in its operation to insure a very uniform product. There is opportunity for a certain amount of the product to get through the operation without sufficient working, and this means lack of uniformity in salt, moisture and in the texture of the goods. It is extravagant in the use of salt in that from two to three times the amount required in the product must be introduced on the worker. It is not possible with this type of machine to work moisture into the goods, as the water is constantly being drained off the working table.

These defects are not characteristic of the drum or cylinder type of worker. It is more positive in its operation, all the product receiving the same amount of working. The worker may be closed and moisture worked into the goods to any degree desired. The temperature of working may be regulated independent of the temperature of the room in which the operation takes place. Economy may be effected in the use of salt by keeping the worker closed. Danish churners are almost unanimous in their preference for this type of worker over the rotary table type. They have also effected an economy in labor by perfecting a machine which discharges its load into trucks below thus eliminating the unloading with shovels.

From the standpoint of labor saving machinery, the printing and packing have received more attention from inventors and machine manufacturers than any other of the manufacturing operations. Not many years ago all bricks were made by hand and few were the men who could make 400 bricks per hour. Today through the effort and industry of certain manufacturers, we have machines which will replace ten to twelve print makers and produce more attractive bricks. Likewise wrapping machines have been built which do the work of from ten to twelve girls, and produce a package perfect in appearance

Whether the margarine manufacturers reap the full benefit of these improvements depends on themselves. If margarine is to be marketed in a great variety of sizes and shapes of packages, these improved machines will be of little use. If the manufacturers agree on a standard size and shape for their retail package and the product is marketed in this manner these machines will pay their cost in a short time.

Other Problems

After the product is packed the factory man's responsibility for a quality product is practically fulfilled. He has only to ship the product and the responsibility then lies with the carrier, the wholesaler and the retailer. These phases of the situation present various problems, most of which are probably the result of carelessness rather than lack of education. In these days of enlightenment it is hard to realize that any of those instrumental in the manufacture and marketing of margarine should not know that it is a perishable product and should be treated as such However, carelessness does exist among carriers, wholesalers and retailers, and it should be the constant effort of the manufacturer to impress on them the necessity of care in the handling of margarine.

The manufacture of margarine is an infant industry. Scarcely more than fifty years have elapsed since it was invented, and what is fifty years in the life of an industry? During that time science has contributed much towards its advancement. Bacteriology and chemistry have evolved principles and methods making possible the improvement in the quality of the product. The results of mechanical genius have brought about economy of production on a large scale. What improvement in manufacturing methods the next few years hold may only be conjectured, but it is safe to say that with the industry in the hands of those responsible for past improvement, progress is indicated for the future.

The Value of Meat in the Diet

(Continued from page 560)

of so-called antibodies—that is, of highly complex substances that are largely protein in nature. When bacteria, or the poisons produced by them, enter the body, they are met by one or more of these defense substances and destroyed or neutralized. Now it is clear that there should always be a surplus of protein-building materials from which the antibodies may be constructed. Such an excess will constitute a 'factor of safety' against disease."

"It is therefore apparent that the most valuable proteins will be those that contain an array of units that can be reunited from all of the varieties of protein entering into the structure of the body proteins. Naturally, the protein which most nearly meets the requirements is meat protein."

Meat vs. Vegetarian Diet

This article can not well be ended without reference to the work of Slonaker and Card[11] at the Leland Stanford Junior University on the restricted or so-called vegetarian diet. Rats were used as the experimental animals, and table scraps, yellow corn, and vegetables were the source of food. One group received the table scraps, including the meat and other animal food contained in the scraps. For the other group, the meat and other animal food was removed as far as possible, leaving, of course, small amounts of meat and some egg and milk. This so-called vegetarian diet was strengthened with nuts and other high protein vegetable matter.

A large number of animals were used and the experiment continued for several generations. On the restricted diet the animals were undersized, and underweight, shorter lived, the young were smaller and less vigorous, sexual maturity was delayed, the powers of reproduction were decreased, sterility was increased, and by the third generation the race of restricted feeders became extinct. On, the other hand, the animals on the diet including the meat and other animal protein were thriving and in every way as good as the stock from which they came.

Among animal foods, meat, milk, and eggs stand highest, and in certain respects meat is unique and can not well be replaced in the diet of man.

1. Archiv fur Physiologie 1909, 219.
2. Biochem Journal 16 (1922), 407.
3. Amer Journal of Public Health 13 (1923), 17.
4. Jour. Biological Chemistry 19 (1914), 323.
5. Jour. Biological Chemistry 47 (1921), 11, 139, 175, 207 and 235
6. Chemistry of Food and Nutrition, Appendix, Table 2.
7. Chemistry of Food and Nutrition, p. 302.
8. Department Bulletin 1138.
9 J. Biological Chemistry 50 (1922), XLIV; 55 (1923), 443.
10. Amer. Journal of Physiology 63 (1922-3), 396.
11. American Journal of Physiology 63 (1922-3), 503; 64 (1923), 35, 167, 203, and 297.

Grocer and Specialty Man

(Continued from page 562)

are three good rules that are well for both jobber and retailer to observe.

All of these are duly recorded in the code of ethics adopted and endorsed by the national and state associations of grocery products, both manufacturers and dealers, reading as follows:

Retailer

It is the particular obligation of the retailer:

1. To consider and treat each and every order he gives as a solemn and binding contract imposing upon him an unescapable legal and moral obligation to accept delivery in pursuance of its terms;
2. To give no order unless and until he truly desires to purchase and unquestionably intends to accept delivery in pursuance of its terms;
3. To give no order unless and until it contains a complete and correct printed and written statement of all the terms of the purchase, and he fully understands such terms;
4. To give no order unless and until he receives a true and identical copy;
5. To purchase prudently and within the limitations of his measured ability to buy and duly sell;
6. To store his products in a proper manner and to sell his older stock first;
7. Not to divert the demand of the consumer for and from a particular specialty product in his stock.

Wholesaler

It is the particular obligation of the wholesaler:

1. Promptly to accept or reject an order submitted to him for acceptance;
2. Promptly to return to the manufacturer (or, at his option, to the American Specialty Manufacturers' Association, where the order bears the stamp of that association) an order declined by him;
3. Promptly to order the delivery of an order accepted by him in pursuance of its terms, and to use every reasonable effort to secure the acceptance of its delivery by the retailer;
4. Promptly to notify the manufacturer (or, at his option, the American Specialty Manufacturers' Association, where the order bears the stamp of that association) of the refusal by a retailer to accept the due delivery of an order given by him, returning it, stating the circumstances of the refusal;
5 To refer no order accepted by him to either his salesman or the retailer for approval or confirmation;
6. To treat a retail order secured and presented by the manufacturer with the same consideration, care and dispatch as an order secured by his own salesman;
7. To store his products in a proper manner and to sell older stock first.
8. Not to divert the demand of the retailer for and from a particular specialty product in filling specialty orders.

The Swells Question

(Continued from page 566)

form recommended by the National Wholesale Grocers' Association. These clauses should be inserted in all contracts signed hereafter, in place of the old "swell guarantee" clause:

"Swells—Except as hereinafter provided, the seller shall make the buyer a flat allowance from the contract price in full consideration of all swells and spoilage computed according to the following percentages:

"For goods in all sizes of tins excepting No. 10: one-fourth of one per cent allowance, on peas, string beans, corn, pumpkin, spinach, beets, succotash, lima beans, red Alaska, pink and chum salmon and tuna fish; one per cent allowance on all vegetables and fruits packed with seeds or pits, excepting tomatoes; one-half of one per cent allowance on all other fruits, fish and vegetables, including tomatoes.

"For foods in No. 10 tins: three-eighths of one per cent allowance on peas, string beans, corn, pumpkin, spinach, beets, succotash and lima beans; one and one-half per cent allowance on all vegetables and fruits packed with seeds or pits, excepting tomatoes: three-fourths of one per cent allowance on all other fruits, fish and vegetables, including tomatoes.

"But if the shipment contains goods that are found to be spoiled by reason of hidden defects and the buyer so notifies the seller within sixty days after notice of arrival by transportation company, the buyer in addition to his other rights, under this contract, shall be entitled, at his option, either to reject the shipment or to obtain from the seller an allowance for all the spoilage caused by said hidden defects.

"The said percentage allowance above specified shall be made to and accepted by the purchaser, in full settlement, for all losses caused by hidden defects as hereinbefore provided, but subject nevertheless to the further provision that if there be development of swells or spoilage or both on or before August first, of the year following the pack, in excess of double the above mentioned percentages, the matter shall be settled by mutual agreement or arbitrated under the rules of the National Wholesale Grocers' Association of the United States, the National Food Brokers' Association and the National Canners' Association."

Further, the National Wholesale Grocers' Association urges wholesale grocers to immediately confer with their canners and their local and state food officials and submit their views on this dangerous and involved system of handling swells. The warehouse-inspection-plan is a deliberate step toward the elimination of the custom of swell allowances in the purchasing of canned foods! If this plan should go into effect, many distributors, in sheer desperation, will neglect trying to secure credit because of the expense, the red tape involved and the losses risked. In addition there will be the temptation, always present to the local dealer, to dispose of swells in an easier but wrong way—back into the channels of commerce surreptiously.

M. L. TOULME,
Secretary.
A. P. WILLIAMS, Chairman,
Canners' Conference Committee.
L. W. MALLORY,
Chairman Contracts Committee.

First Annual Conference of Food Products Institute of America

At the Waldorf-Astoria on November 26 was held the first annual conference of The Food Products Institute of America.

During the course of his opening address on The Aims of the Institute, Dr. Frederic Dannerth, secretary, said, in part:

"We apparently are much in need of coordinated effort in our industry. Some fields which offer opportunity for coordinated effort, are the problems relating to: cost finding and accounting; correct information on raw material markets; storage facilities for food raw materials; transportation of food raw materials; conveyors for packages in factories; cooling, heating, humidifying and drying; tin containers and glass containers; sanitation and illumination of factories; methods of distributing and merchandising; education of the wholesale consumers of raw materials; education of the retail consumers of finished products; advertising by displays in magazines and other media.

"Whatever the problem, it is very likely that one of the 58 divisions of the food industry has encountered it on a previous occasion, and has solved it in a satisfactory manner. Then why in all the world, don't you and I go to that other division of our industry, and take lessons.

"You, the executives of the food industry have told me time and again that you are too busy with the problems of your own corporation. You are working overtime, and your desks are filled, now, with work yet to be done. But all the while you are wrestling with your own problem, there has been some other executive who has been squarely up against the very same thing, and has found an answer to his problem—somewhere.

"This is a state of affairs, now very prevalent in our industry, and it was with that in mind that the Food Products Institute of America, was created."

The program of the conference follows:

Presiding officer, Lorenzo Benedict, President Worcester Salt Co. Introduction: Frederic Dannerth.

Address: "Importance of Discrimination in Choice of Foods," "Oscar," Chef, Waldorf Astoria.

Address: "International Problems of Food Industry," G. A. O'Reilly, Vice-President, Irving Bank-Columbia Trust Company.

Three addresses on "How to Secure Coordinated Effort in Food Industry," A. F. Stock, of Ross Brothers and Montgomery; Harry E. Tipton, Pres. Shults Bread Co; A. R. Rule, Fed. Fruit and Vegetable Growers;

Mr. Benedict spoke briefly on history of the Institute as follows:

"Twenty months ago a dozen prominent, national, producers of foods and food products met in Newark, New Jersey, to lay the foundations for a new idea in coordinated effort for the entire American food industry.

"The outcome of these deliberations has been the educational institution which we know as the Food Products Institute of America. An institution, organized, not for profit, but to collect and distribute accurate and dependable data concerning purchasing, production and distribution in the food industry.

"It was founded as an educational institution, whose business it is and will be, to collect and distribute to the executives of the food industry, accurate information and periodic reports on the subjects mentioned earlier in my talk.

"To accomplish this purpose, it is necessary to establish office facilities, a reference library, practical kitchens, and scientific laboratories. Then when special information is collected for one corporation in any of these divisions of the Institute, the information will be the property of that company. But in general it will be the aim to make the information accessible to all food executives."

This in Not an Advertisement

We know a man who has had a valuable experience with one of the outstanding food manufacturers who is seeking a change. He is fitted to be an assistant sales manager where his special ability to coordinate sales and advertising work would be valuable. Any manufacturer seeking such a man can write to THE AMERICAN FOOD JOURNAL and his letter will be referred to this man.

We also know a woman whose services as an expert in home economics would be of definite value to a food manufacturer desirous of adopting progressive publicity methods. She is qualified by training and successful experience to organize publicity on an educational basis, and to develop a service that can, in the natural course of events, show good financial returns.

Silicate of Soda Improves Packages

By JAMES G. VAIL
Philadelphia Quartz Company

SPICES from the East were among the earliest articles of commerce. When the only transport overland was on the backs of camels or other none too willing beasts of burden, one round trip was a matter of months with dangers manifold from disease, starvation and robbers. Such merchandise was, like gold, very precious. Under these circumstances it was important to provide the best containers that were known and cost was a minor consideration.

Transportation has advanced far in the last few hundred years and the cost has been greatly reduced. Coffee, tea and spices now appear on every dining table. Economy in packing has become important, and materials unknown to the ancients have been developed. From these are made the inexpensive modern shipping containers, which deliver their contents in better condition than the heavy, clumsy, costly chests of the olden caravan.

Cheap paper and silicate of soda, which is also a low priced product, have wrought a revolution in our ideas of containers for this class of merchandise. Without them we should be more at a loss than Rip Van Winkle after his long nap. Paper is so well known that an explanation of its properties here seems superfluous. It is, from many angles, almost ideal as a covering for products which must be kept clean and free from contamination of every sort. Contamination, however, is only part of the story.

The fine aroma of coffee, the choice flavor of spices and the delicate fragrance of tea, are all due to oils which slowly evaporate into the air, and paper, unless treated with some substance which renders it impervious, offers but slight resistance to their escape. It is pleasant to enter a coffee shop and the fragrance present produces the sort of suggestions that result in sales, yet the most delightful cup of coffee comes from the package which keeps the fragrance inside. The most economical substance for making paper proof against the penetration of oils is silicate of soda, which brings us to our story, for this material of many uses serves the shipper of coffees, teas and spices in several ways.

Silicate of soda is a relative of glass, but it can be dissolved in water to make sirupy solutions which dry again to smooth coatings or strong adhesives. The proportions of soda and silica—or sand, from which silicate of soda is made can be changed, and with such changes come changes in body and stickiness and in the time it requires to dry. Thus a manila stock cardboard for making cartons can be coated with a silicate which dries so fast that the coating rolls can be run a hundred or more feet a minute and the coated drying process and without danger of paper rolled up without any heating or sticking. Another silicate of the same superficial appearance might require fifty times as long to dry.

By the correct preparation, exactly the qualities desired can be secured every time. The names S, N, O and Seal each denote an accurate specification of a grade of silicate of soda for a specific purpose. These are carefully adhered to but it is essential to know which is needed for a specific thing. To buy silicate of soda under the impression that it is all alike may spell failure.

Food Flavors Retained

Investigation has shown that those substances which resist the penetration of oils applied to them in liquid form also resist the penetration and loss of the vapors of the essential oils, which are prized for their flavors. Coatings of silicate of soda are well known to have this property. Casks for shipping cottonseed oil and indeed, most edible oils, are regularly treated with a solution of silicate of soda to keep the wood from acting like a lamp wick and wasting the oil. Uncoated paper quickly absorbs grease or oil from biscuits and cakes but cartons made from silicated paper do not, hence their use preserves the contents and prevents the discoloration of decorative coverings.

Where the package must also be waterproof, a thin layer of paraffin may be applied over the silicate to good advantage. Butter cartons are best treated in this way. Silicate of soda is the only economical grease proofing material which is always odorless, sterile and will not sour or mold.

Its property of keeping in the flavors of coffee, spices and the like is one of the many reasons for using the fibre container in the coffee, tea and spice trade. Solid fibre boxes are built up from several layers of paper cemented together by layers of silicate of soda. The two, three or four films of silicate which surround the goods packed in such a container contribute to keeping the flavors in as well as to keeping the vermin out, for experience has shown that silicate has a very discouraging effect on the creatures thus classified.

Of course this is only one of many advantages of the fibre container which depends on silicate of soda. The stiffness and mechanical strength of the board is made possible by the use of the silicate adhesive which binds the parts together. It is so much stronger than the substance of the paper that when a box is tested to destruction, it is the fibre and not the silicate which gives way.

Here we can only mention in passing that silicate is also one of the chemical agents which is used in the manufacture of paper to make a harder, smoother sheet. Glassine and greaseproof papers in particular are improved by this means.

Containers made from large spirally wound or convolute tubes can also be built up with a silicate adhesive and packages such as the Snyder barrel which is wound up as a double cone from narrow strips of silicated paper, are variations of the ways in which the demands for better and more economical packing are being met.

Once the problem of building the most suitable container has been solved, the goods may be packed, but no amount of care up to this point avails if the closure is inadequate. The package must be closed to carry through ordinary conditions of handling, but it should also be as nearly as possible proof against loss from pilfering. The caravan trade guarded against such loss with swords and spears and a host of strong right arms. Today, we have to use more subtle means.

Good Sealing Essential

Goods sold under seal today are protected from the point of view of both buyer and seller. The former knows he is getting what he pays for and the latter that he is not being misrepresented by inferior or damaged goods. A good seal is one that can not be broken without leaving a mark to show what has happened.

Not only for security against theft is silicate sealing to be recommended. When the package is sealed, long storage does not disfigure the contents by the infiltration of dust. Therefore, a sealed closure is to be preferred and it costs no more. No machinery is required where only a few boxes are to be sealed, and the larger shipper is able by a simple and convenient device to close great numbers of containers quickly, neatly, securely and with small cost for labor.

All adhesives, indeed all closures, must be used with regard to a few simple fundamental conditions. The procedure for using silicate of soda is very easy. The container flaps are coated with the adhesive over their entire surface, they are pressed firmly together and held in contact till setting has begun. The bond is usually strong enough to permit handling within two minutes but a longer time in which the sealed package remains undisturbed is to be preferred.

Silicate of soda is made under exact control from mineral ingredients which are as clean as the packages or the coffees, teas or spices, and it is not subject to decay.

MOUTH HYGIENE
FOR
SCHOOL CHILDREN

By ALFRED S. FONES, D.D.S.

Director of the Division of Dental Hygiene. Board of Education, Bridgeport, Connecticut.

This book discusses the diet essentials in the building of firm, dense teeth. Dr. Fones believes that dental caries may be prevented by proper attention to the diet, and that school children may be taught to like foods that will make strong teeth and healthy bodies. He urges that children be taught to eat such natural sweets as figs, dates and raisins, real molasses, honey and pure maple syrup.

The most carefully selected food, however, will harm the teeth if allowed to remain on their surfaces. Dr. Fones tells how children may be taught to care for their teeth, and gives directions for a toothbrush drill for school classes. His booklet contains other material of great value to dietitians and home economics workers.

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DIGESTS FROM FOOD MAGAZINES

Plan for U. S. Grading of Raw Products

"Whenever standardization of any commodity has received an intelligent trial, it has been accompanied by an improvement in quality and a betterment of general market conditions," says Charles W. Hauck, investigator in marketing for the United States Department of Agriculture, in the December issue of "Canning Age." For this reason Mr. Hauck believes that the time is opportune to suggest to the grower of cannery crops that he apply to his dealings with the canner the same grading principle that he has been using so successfully in the marketing of his wheat, his apples, and his potatoes.

Because of the fact that the value of a given lot of tomatoes to the canner varies accordin gto the differences in quality and condition, it is impossible to establish a flat price for a ton of tomatoes that will be fair to the canner and grower alike under all conditions. For this reason the marketing division of the Department of Agriculture has made some valuable suggestions regarding the grading of the raw product. So far the work done and the tentative grades drafted have been confined to tomatoes, and the grades are to be revised to some extent before they are recommended as official grades.

According to Mr. Hauck the grading plan suggested would create a common language by which grower and buyer could describe each individual lot of tomatoes. Furthermore, it would focus interest upon better seed selection and plant breeding, work that is much needed in most localities. The fact that better quality brings a higher price is always an incentive to better production.

The system to be effective should be adopted uniformly over as wide a territory as possible. The plan suggested would necessitate inspection by a third disinterested party who would sample the loads and determine the grade. This work might be done in much the same way in which fruit and vegetable inspection is carried on by the Bureau of Agricultural Economics of the Department of Agriculture.

Obligations in Physical Science

The professional obligation of chemists to each other is emphasized by Elwood Hendrick in an article in the December issue of "Industrial and Engineering Chemistry." The writer mentions trying conditions which often prevent research workers from accomplishing the big things of which they are capable. The fact that the solutions of a difficult chemical problem cannot be solved by the time clock, often results in a lack of coordination between the chemist and the efficiency engineer. "We must protect the man engaged in real research," says Mr. Hendrick, "because he is a sacred possession of his generation."

The obligation of the chemist to the industries is likened to that of a teacher to pupils. Many industries have not as yet accepted the research chemist because they do not see any need of research work. For that reason it is the obligation of the chemist to the industry to present such proposals—with costs figured out—that would improve either quality or yield, and thus like the teacher, to teach the lesson whether the industry wants it or not.

What Hospitals Expect of Dietitians

"A hospital as well as an army travels on its stomach," says Dr. Louis H. Burlingham in the December number of "Hospital Management," "and therefore the superintendent has the right to expect a great deal from the dietitian." In enumerating the qualifications of a good dietitian the writer mentions the following: character, courage, an equable disposition, fair-mindedness, cooperation, loyalty, a liking for executive and administrative work, and an interest in scientific and research problems. Needless to say a background of culture and refinement are a great asset.

As to training, "she should have college work with special work in science, dietetics, food values, home economics, should have one degree, and if more than one so much the better." In addition she should know how to cook well, and should have training as a student dietitian.

Her field should cover the preparation and serving of all food to all the personnel of the hospital with all that implies—and it seems to imply a great deal when all the different classes of people to be fed and made happy are considered. In addition she must keep down costs, render accounts, besides teaching cookery and dietetics to the student nurses.

In return the writer considers it only fair that the dietitian receive all the consideration due the head of a very vital part of the hospital organization.

Canners Hold Interesting Demonstration

An interesting demonstration which is being conducted annually by the Northwest Canners' Association, is described by E. M. Burns in the December 15 issue of "The Canner." That this plan has great educational value is indicated by the noticeable improvement in the pack opened at the second demonstration held last year. The results of the next demonstration which is to be held early in January are awaited with great interest.

Samples of early fruits and later of tree fruits and vegetables are selected from different canneries by an outsider. Later all private marks are removed and the cans marked with a private code. When the cans are opened the complete report of the judges includes: name of fruit, code, variety, vacuum, fill, size of can, quality, color, syrup, exhaust, cook, cool, drained weight, liquid, double seam, and remarks.

By virtue of the code system a packer may freely criticize his own can during the discussion without being aware of it until later when a complete report is given to each member. One day is taken for discussion and judging each class of fruits or vegetables.

Results last year indicated a great improvement in pack and in interest and cooperation in following grading specifications.

Pectin, Jams and Jellies

Something of the history, character and use of pectin is given in an article by Julian S. Cohen in the December issue of the "Fruit Products Journal and American Vinegar Industry." Great interest has been aroused in pectin. The exact formula of pectin is as yet unknown but the writer tells why and how it can be used to good advantage in the making of jellies, jams, and preserves. These products were formerly by-products of the canning factories and were made with very little knowledge or thought of the "why" of the process used.

The production of large quantities of pectin from apple pomace, which was formerly discarded, has led to much research work and careful study of the problems involved in the manufacture of sweets. The use of pectin makes possible a greater variety of jellies, jams, and preserves, and also makes it possible to make better products because the natural variation in the amount of pectin and acid in the fruits can be supplemented so as to give the exact composition which will give the best product.

Before the use of pectin became general apple juice was added to fruit having little pectin. The apple supplied pectin to make the mixture jell but often covered up the flavor of the other fruit.

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BOOK REVIEWS

Vitamins. By Ragnar Berg. Translated from the German by Eden and Cedar Paul. A critical survey of the theory of accessory food factors. Alfred A. Knopf, New York City.

The author who is director of the laboratory of physiological chemistry at Weisser Hirsch, has with true German thoroughness and carefulness of detail, compiled and summarized data from the whole world of research on the subject of vitamins in this one volume. The amount of material used is indicated by the 1,556 references listed in the bibliography.

Considerable space is devoted to the biological value of the various proteins and the importance of inorganic substances to the body.

One innovation is the number of vitamins, or "complettins," considered by this author who classes five instead of the usual three or four in his table showing the value of each in various foodstuffs. The five are: "A, fat soluble often referred to as the antirachitic principle; B, water soluble, whose predominant importance according to Berg is as growth factor; C, water soluble, the antiscorbutic principle; and D, water soluble, differentiated by Berg both from B and from Funk's vitamin or vitamins, but like the latter functioning mainly as an antineuritic."

The vitamins, complettins, or accessory food factors are also treated from the standpoint of the deficiency diseases.

The book is a valuable addition to the literature on the subject and is designed for chemists, physiologists, and nutrition workers. The layman or young student would become lost in the vast quantity of material presented.

The Eleventh Annual Report of the Secretary of Commerce. Prepared at the office of the United States Department of Commerce, Washington, D. C.

This report as submitted by Secretary Hoover to the President is divided into the following sections: the general economic situation during the fiscal year; the general administrative work of the department; investigations into various economic problems in persuance of the organic act; recommendations in remedy of obsolete legislation and to meet new problems that have arisen in the department, that our commerce and industry may be advanced; and special and more detailed reports of the different bureaus and divisions of the department and special recommendations of their directors.

The report of the work done in various phases of elimination of industrial waste by means of simplification and standardization will be of great interest to all divisions of the food trades, many of whom have cooperated in that work. An estimate of the annual value of these simplifications to industry and savings to the general public would run into many millions of dollars.

The report of the foodstuffs division indicates the large amount of valuable information on the foodstuffs situation in foreign countries including a survey of foreign food laws and regulations affecting imported products. More than 70 special inquiries have been carried out through questionnaires and requests to foreign representatives of the Government

---

Marine Products of Commerce. By Donald K. Tressler, Ph.D. The Chemical Catalogue Company, Inc. $9.00.

This book which is prepared for both the scientific and the practical man, considers marine products from the standpoint of their acquisition, handling, biological aspects, and the science and technology of their preparation and preservation.

The author who was formerly connected with the Mellon Institute of Industrial Research, and is now with the United States Bureau of Fisheries, has carefully prepared a large volume of valuable and interesting material which will be of value to the man in the food trades, the foods teacher, as well as the man who is dealing directly with marine products.

Commerce Yearbook. 1922 (including early part of 1923). Prepared by the United States Department of Commerce, Washington, Government Printing Office, Washington, D. C. $.60.

This is the first issue of this publication which is to appear annually hereafter. According to the letter of submittal to Secretary Hoover, the Commerce Year Book has been prepared by the Bureau of Foreign and Domestic Commerce with the cooperation of the Bureau of Census in response to the demands of American business men, bankers, economists, trade associations executives and the trade press for an authoritative review of the economic year throughout the world prepared from the point of American industry and commerce.

The book will serve as a reference for specific facts on the recent past of business and also gives general commercial information and a survey of the most important economic developments of the year.

All branches of the food industry will be interested in the convenient tabulation and analysis of the outstanding facts of trade, production, price changes, and market conditions, as well as the summaries of the commercial and industrial developments of United States and the principle foreign countries.

The Annual Report of the Secretary of Agriculture. Prepared at the office of the United States Department of Agriculture, Washington, D. C.

In the annual report of the Secretary of Agriculture satisfaction is expressed in the marked improvement in agriculture during the year 1923. The report of work done in the field of scientific research is of particular interest to all who are engaged in the production, storage, and distribution of food products.

The new Bureau of Home Economics has outlined a program of work which will greatly strengthen our scientific knowledge of foods.

The Home Dietitian, or Food and Health. By Belle Wood-Comstock, M.D. Review and Herald Publishing Association, Washington, D. C.

Because she feels that the greatest need of people today is education in normal living, the author dedicates this book to the housewife in the hope that it may help her in her great task. It is a discussion in popular form of the food needs of the body with chapters on food fads and idiosyncrasies.

Chemistry, Applied to Home and Community. By Pauline G. Beery, A.M. J. B. Lippincott Company, Philadelphia.

This book is designed to be a text book and laboratory manual for home economics students and is based on a knowledge of organic chemistry. However, from the list of subjects covered one can readily see that the book will have general interest to any scientifically trained woman. Three chapters are devoted to foods considering the chemical composition, the chemistry of digestion, food values and requirements, and the chemistry involved in certain cooking processes.

Manufacturers will find much of interest in this book as it indicates the extent to which chemistry of the household is being studied by home economics women who are treating the problems of every day living from a scientific standpoint.

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New York

Round. vs Square Packages

(Continued from page 564)

the consumer. Another advantage of the square package for dry and loose products, such as a cereal, is that the contents pour more directly from the angle of the square of the package than from the arc of a round package.

"The square package does not seem so well adapted for food products, which must be kept as nearly airtight as possible because the eight corners are easily damaged and the natural 'spring' of the sides in conjunction with the cover is likely to admit air after the seal is broken and the package is opened for use, if not before.

"One notable exception to this is Uneeda Biscuit which are packed in a patent square package of peculiar folding construction which make the package, after it is sealed sufficiently airtight and moisture proof to keep the contents fresh and crisp until eaten even though Soda Crackers have a strong affinity for moisture and quickly lose their crispness when exposed to the air.

"The round package with no corners to break open and a cover that fits snugly, is, it would seem, most suitable for such products as baking powder or salt which must be protected from moisture, or for coffee which loses its flavor if exposed to the air. Another argument offered in favor of the round package is that it fits the hand better than a square package. This factor is so largely controlled by the size of the package as well as by the size of the hand that it has six points in its favor and a half dozen against it.

"After all, the wise don't judge an egg by the shell—even though they do pay more for brown eggs in Boston and white eggs in New York."

From B. Fischer and Company, importers, New York City:

"It is rather difficult to give you a general statement on the subject that you desire inasmuch as trade practices and customs and so many other important features enter into each individual food condition that we would hesitate going on record as favoring either round or square, since each individual item should be discussed on its merits. As an illustration, it is decidedly impractical, if not almost impossible, to pack a square vacuum can of coffee, that is, at a cost which would not be prohibitive. On the other hand, a square carton for coffee is in many ways far more advantageous to the packer, but absolutely impractical because of its non-keeping qualities, etc."

From the Aunt Jemima Mills Company, St Joseph, Missouri:

"We started our pancake business with the absolutely square package. This was changed to a rectangular package on acsount of the lost of production, operation of automatic machines, etc.

"As a natural result of starting out this way, our factory was equipped with square package machines. Therefore, when we put out other products such as Grits and Meal, we found we could so do without a further investment as to machines and also as to cost of production by packing these products in the same shaped package. Had we been packing pancake flour in the round package, we probably would have put up the other products in round packages also.

"We do not think the round package can be produced as cheaply as the square package. However, we may be mistaken in this, for it may be that manufacturers who have purchased the round packaging machinery can produce a round package just as cheaply as we do the rectangular

"It goes without saying that the round package takes up more space in shipping and storirg.

"The round package, on account of its shape has greater strength than the square package and is probably a little more impervious to insect borage.

From Gould, Wells and Blackburn Company, wholesale grocers of Madison Wisconsin:

"When the makers of the square food package have overcome the weakness of the corners, that package will displace the round carton on account of its greater economy in shipping and in-store space.

"Then, too, the fact that it presents a more attractive front for advertising purposes is greatly in its favor."

From the Robert Gair Company, New York City:

"In our opinion the square folding box far surpasses in general utility and effectiveness the round set-up carton for the marketing of food products. We have entire faith in the square box. Its easy manufacture, its convenience of delivery and the strength of its advertising appeal, makes us concentrate our efforts on its improvement and sale.

"In manufacture the square box is easily made attractive by the application of printing or lithography directly to the board, and the forms of decoration possible at a minimum cost cover all processes used in advertising. The round box is usually label wrapped with an extra operation.

"The boxes are shipped to the packer flat, saving much freight expense, and in this form are economical of storage space at the packer's plant. After filling, the square package makes a more compact shipping unit and stacks better on the dealers' shelves.

"The flat surface of the square box presents an admirable surface for advertising display. The entire surface of the front panel is visible from all angles, and for that reason is more adaptable than a curved surface to both color display and the perspective of pictorial advertising. Furthermore, the square boxes stacked on the dealer's shelf form an unbroken line of display, all parts of which are within clear view of the consumer.

"We have not attempted to present complete evidence in the case of The Square Box vs. The Round Box, but only to cover the more important points."

From the Sanitary Grocery Company, Washington, D. C.:

"As far as our experience goes we consider the square package just as good as the round, with the single exception of from the consumers' standpoint, it is possible to open the round package, use what is wanted, cover it up again, and have a closed package of merchandise until again needed."

From the Genesee Pure Food Company, LeRoy, New York:

"The Genesee Pure Food Company packs all its products in square packages as our experience has been that we best serve the items of convenience in handling, economy of space and economy of packing by this type of container."

From the Postum Cereal Company, Battle Creek, Michigan:

"We have had no practical experience here with the round package for food products.

"I have been in quite a number of factories where they were putting up their products in round packages, and there are many disadvantages from a manufacturing standpoint.

"In the first place, the round packages are so bulky that they cannot be stored in any considerable quantities, empty. Second, they are very unstable and do not readiiy adapt themselves to conveying and transporting about the plant during the process of packing. Third, it would be a more or less difficult thing to make an airtight seal on a package of this sort.

From the Pillsbury Flour Mills Company, Minneapolis, Minnesota:

"All of our actual experience in the packing of food products has been in connection with the square package rather than the round. While we have our opinion of the comparison between the two we should not care to give you our views for publication inasmuch as we have not, by actual experience, used a round carton which would give us the cost of the package, convenience in handling, economy of space, etc., as our opinion on this is only by investigations which we have made in order to make comparisons with the square package we are using."

A Correction

The organization chart of the Bureau of Public Health Service which appeared in the November issue in the Conference Table was printed by courtesy of Surgeon General Hugh S. Cummings.

M Chem.

NOVEMBER 1923

The American Food Journal

The National Magazine of the Food Trades

DEC 5 1923

In this Issue

Value of Cereals Established by Research

M. S. FINE

Principles of Industrial Organization

H. N. STRONK

CONFERENCE TABLE

The Nation's Food and the Law Makers

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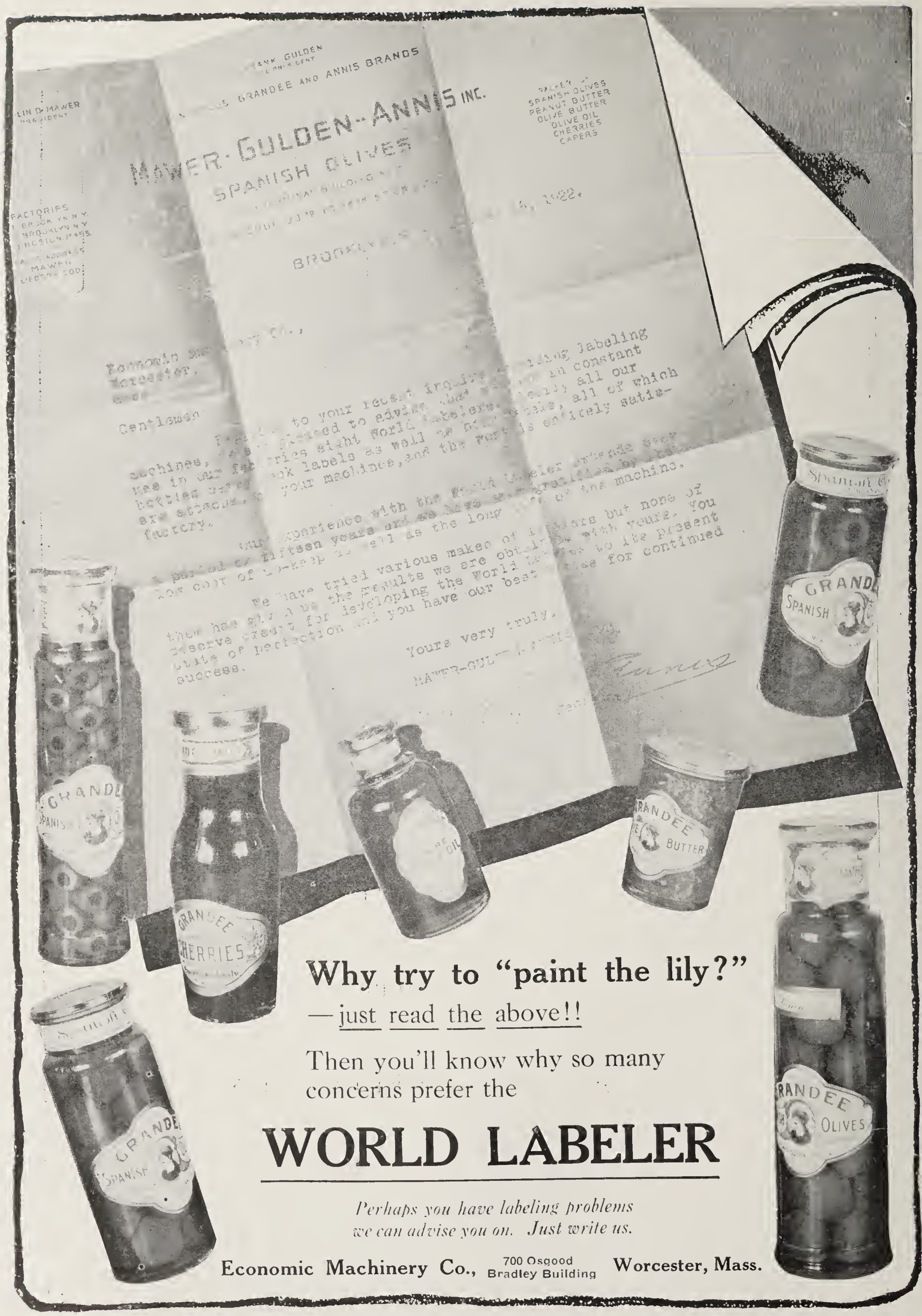
FOOD AND HEALTH EDUCATION

Convention News --- Digests from Food Magazines --- Food Technology



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We have tried various makes of labelers but none of them has given us the results we are obtaining with yours. You deserve credit for developing the World Labeler to its present state of perfection and you have our best wishes for continued success.

Yours very truly,

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VOLUME XVIII

The American Food Journal

NUMBER 11

The National Magazine of the Food Trades

Established 1906

C. E. WRIGHT, Editor

WINIFRED STUART GIBBS, Associate Editor

BLANCHE INGERSOLL, Assistant Editor

Contents for November, 1923

The Editor's Page 507

The Place of the Trade Paper in Modern Business
C. E. Wright 509

Value of Cereals Established by Research........M. S. Fine 511

Principles of Industrial Organization ....H. N. Stronk 513

The Conference Table 515
The Nation's Food and the Law Makers, by Gertrude Seymour.
Selecting Food with the Eye, by E. H. S. Bailey.

Convention News 518
Varied Food Interests Represented in Conventions.

Food Technology 519
The Formation of Maltose in Sweet Potatoes on Cooking, by H. C. Gore.
An Investigation of Oyster Spoilage, by Albert C. Hunter and Bernard A. Linden.
The Chemistry of the Raisin, by M. L. Willard.

Editorial 520

Food and Health Education 521
Socializing the Recitation.
Window Shopping for Foods Material.
Clothing as a Factor in Nutrition.
Promptness and Health.
Milk for the Whole World.
The Story of Foods and Food Products.
Practical Dietetics Pays the Coal Bill.

Book Reviews 546

Digests from Food Magazines 548

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Association Calendar

American Assn. Creamery Butter Manufacturers, Continental and Commercial Bank Building, Chicago. Secretary, George L. McKay.

American Bakers' Assn., 1135 Fullerton ave., Chicago. Business manager, H. E. Barnard.

American Chemical Society, 1709 G street, N W., Washington. D. C. Secretary, Charles L. Parsons.

American Cider and Vinegar Manufacturers' Assn., 841 Powers Bldg., Rochester, N. Y. Secretary, Paul Benton.

American Corn Millers' Federation, 332 South La Salle st., Chicago. Secretary, T. M. Chivington.

American Dietetic Assn., Washington, D. C. Secretary, Beta Luther, Children's Hospital, Boston.

American Home Economics Assn., 1211 Cathedral st, Baltimore. Alice F. Blood, Simmons College, Boston; Lenna F. Cooper, School of Home Economics. Battle Creek, Mich.

American Macaroni Manufacturers' Association, 26 Front st., Brooklyn. Secretary, Edward Z. Vermylen.

American Manufacturers' Assn. of Products from Corn, 208 South La Salle st., Chicago. Secretary, Dr. W. P. Cutler.

American Specialty Manufacturers' Assn., 52 Park pl., New York. Secretary, H. F. Thunhorst.

Biscuit and Cracker Manufacturers' Assn. of America, 90 West Broadway, New York. Secretary, R. T. Stokes.

Flavoring Extract Manufacturers' Assn. of the United States. Secretary, Gordon M. Day, Day-Bergwall Co., Milwaukee.

Institute of Margarin Manufacturers, 1212 Munsey Bldg., Washington, D. C. Secretary, J. S. Abbott.

Institute of American Meat Packers, 509 South Wabash ave., Chicago. Secretary, W. W. Woods.

National Coffee Roasters' Assn., 64 Water st., New York. Manager, Felix Coste.

National Assn. of Ice Cream Manufacturers, 155 North Clark st., Chicago. Secretary, N. Lowenstein.

National Assn. of Retail Grocers, 416 R. A. Long Bldg., Kansas City, Mo. Secretary, H. C. Balsiger.

National Canners' Assn., 1739 H st., N. W., Washington, D. C. Secretary, Frank E. Gorrell.

National Confectioners' Assn., 11 West Washington st., Chicago. Secretary, Walter C. Hughes.

National Dairy Council, 910 South Michigan ave., Chicago. Secretary, M. O. Maughan.

National Dairy Union, 630 Louisiana ave., Washington. Secretary, A. M. Loomis.

National Food Brokers' Assn., 326 West Madison st., Chicago. Secretary, Paul Fishback.

National Macaroni Manufacturers' Assn., Braidwood, Ill. Secretary, M. J. Donna.

National Milk Producers' Federation, 1731 I st., N. W., Washington, D. C.. Secretary, Charles W. Holman.

National Paper Box Manufacturers' Assn., 112 North Broad st., Philadelphia. Secretary, William W. Baird.

National Pickle Packers' Assn., 326 West Madison st., Chicago. Secretary. F. A. Vickers.

National Wholesale Grocers' Assn. Secretary, M. L. Toulme, 6 Harrison st., New York.

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To further the interests of the pure food movement we will furnish, without cost, Beech-Nut Macaroni and Peanut Butter exhibits to domestic science teachers, dietitians and others engaged in the dissemination of pure food information.

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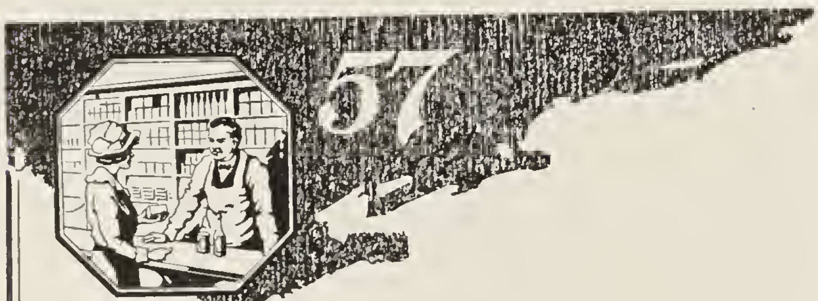

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Heinz advertising goes to the housewife and works for you while she plans meals which she knows will please her family.

This month, for instance, magazines with large space devoted to Heinz Mince Meat and Heinz Cooked Macaroni with Cheese and Mushroom Sauce are going into the homes of your customers.

This advertising works for you in your neighborhood and among the people who buy from you.

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57 Varieties

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GENERAL OFFICES: ST. LOUIS, MO.
"Milk at its Best"

THE EDITOR'S PAGE

ONE of our editors brings inspiring word from our friends and advisers in Baltimore and Washington. Dr. E. V. McCollum of Johns Hopkins University is of the opinion that the food manufacturer can render no higher service to the industry than by the establishment of nutrition departments. Such departments, while they feature the special products of individual manufacturers, are of great value to the trade in general. Our readers already know that THE AMERICAN FOOD JOURNAL maintains a special department the purpose of which is to advise food manufacturers along these very lines. We are privileged to announce that Dr. McCollum will act as our informal counsellor in developing plans for our Food Service Bureau.

OUR Washington visit was equally helpful. Acting on the wise suggestions of Dr. W. W. Skinner of the Bureau of Chemistry THE AMERICAN FOOD JOURNAL has already set in motion machinery for a further welding of the interests of the food chemist and the food manufacturer. Dr. Louise Stanley, Chief of the newly formed Bureau of Home Economics, will soon have something to say to our readers as will also Dr. Brown the new Chief of the Bureau of Chemistry. And this is but the merest hint of what we shall have to offer our readers!

THE food manufacturer is fully cognizant of the fact that he must know his product; know it from the point of costs and selling price; know how to advertise it; know to develop it. It is a safe assumption, however, that readers of Dr. Fine's article on page 511 will have a new conception of what is involved in this knowing of one's product. "Unsuspected possibilities," writes Dr. Fine, "may be uncovered"—but let Dr. Fine himself tell you what these are!

ELSEWHERE in this issue (page 517) appears the notice of the proposed conference of the officials of various trade associations in the food industry. While our relation to the conference, which is to be held under the auspices of The Food Products Institute of America, is purely editorial, we bespeak for the conference the hearty cooperation of all who are interested in coordinating the interests of the food industry.

"I AM finding and using many helpful suggestions in FOOD AND HEALTH EDUCATION and feel fully repaid the cost of subscription although I have received but a few copies." Dana Waynick, home economics teacher, Los Angeles, Calif.

"IT is very helpful to have all available material put before teachers as you are doing in FOOD AND HEALTH EDUCATION." Alice McCarthy, Brookline, Mass.

"YOUR paper is excellent and the listing of available material and the dispatching of it does much to save time of the busy teacher." Helen E. Bumgarden, St. Paul, Minn.

WHILE on the subject of "Food and Health Education" we can not refrain from calling attention to some of our new ideas for cooperation between the teacher and the manufacturer. This time it is the manufacturer of paper novelties, the Dennison Company. Teachers have long known the value of material from this organization, but on page 522 we describe a new adaptation of this material to the requirements of the teacher.

MODEST though we may be we confess to a feeling of gratification at a letter from Wm. B. Kamprath of the Board of Education, Buffalo, New York. Writing of the coming convention of the National Society for Vocational Education, Mr. Kamprath says: "We are anxious that all National and State leaders, superviors, directors, teachers and others interested in Home Economics attend the 17th annual convention; THESE PEOPLE CAN BE REACHED BEST THROUGH THE COLUMNS OF YOUR PERIODICAL. PLEASE PUBLISH THE ATTACHED NOTICE IN THE NOVEMBER ISSUE OF YOUR PAPER. Naturally the notice appears (page 530). This comment is merely for the purpose of notifying food manufacturers and others how we stand as a medium for reaching teachers of home economics!

IN our efforts to broadcast all available information regarding the advantages of organization within an industry we are fortunate to be able to present to our readers the excellent paper on page 513 on the subject of what this organization has accomplished for the baking industry. Those who recall our article in the October, 1922, issue on What the Baking Industry Has Accomplished will feel that the present paper is an eminently satisfactory sequel. Many of the problems touched upon by Mr. Stronk are of the group which we designate as common to all manufacturers, whether their products be ships or shoes or sealing wax or cabbages!

IN view of the fact that THE AMERICAN FOOD JOURNAL is to offer its readers unusual material along the lines of food distribution, legislation and education, Gertrude Seymour's article in this issue of The Conference Table is very timely. Miss Seymour herself is one of the organizers of the Association of Women in Public Health, a former executive of the United States Public Health Service and an editor of note. Asked for officially descriptive phrases to accompany her name, Miss Seymour said: "I like to step out on my own two feet." That her feet have carried her far along the road of scientific and popular public service to those who read her paper on page 515 will agree.

The Value of Super-Bread

In his paper "Food Selection Versus Food Compounding" read before the Seventy-fourth Annual Session of the American Medical Association in San Francisco, June, 1923, and reported in the J.A.M.A. September 15th, 1923, Alonzo Taylor discusses the value of complete foods in the form of bread.

After stressing the importance of a balanced diet including the liberal use of milk, leaf vegetables, and raw fruits and the difficulty and expense of maintaining such a balance in many localities at all seasons of the year, he says:

"With advancing knowledge the thought arose to attempt the compounding of a single competent food. This is being undertaken particularly in the direction of bread. If full milk is used instead of water in the making of bread dough, this alone makes the bread a relatively complete foodstuff. If in addition, salts and water-soluble vitamins are added, the competence becomes complete. . . . Such a bread is necessarily more expensive than ordinary bread. This, however, is illusory. Milk can be sold in bread at a cheaper price than as fluid milk, probably for half the price. . . . Such a bread would find a well-deserved place in the school lunchroom. It would piece out the various inadequacies of the diet of the uneducated classes. The lunch of the shopper, clerk and shop girl, now largely sweet stuffs, would be improved."

Dr. Taylor accurately describes

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Important Books

On Foods and Food Values

Story of Nutrition Study and Discussion of Vitamines

Vital Factors of Foods. Vitamines and Nutrition. By Carleton Ellis, S.B., F.C.S., Consulting Chemist, and Annie Louise Macleod, Ph.D., Associate Professor of Chemistry, Vassar College.

Food manufacturers and nutrition workers will welcome this comprehensive and exhaustive history of the progress made in developing the technique of nutrition studies. **$5.00**

Principles of Nutrition—W. H. Jordan, Director New York Agricultural Experiment Station. Aims to show the adjustment of reliable facts to a rational system of nutrition without insisting upon adherence to technical details that are not feasible in the ordinary administration of the family dietary. The treatment is practical as well as scientific. **$2.50**

The Newer Knowledge of Nutrition—E. V. McCollum, of the School of Hygiene and Public Health of Johns Hopkins University. An authoritative new book that demonstrates beyond argument the great value of milk and dairy products in the human dietary, and shows how these are to be employed in promoting growth, health and vigor. **$2.50**

Pharmaceutical and Food Analysis. A Manual of Standard Methods for the Analysis of Oils, Fats, and Waxes, and Substances in Which They Exist; Together with Allied Products. By Azor Thurston, Late Chemist to the Ohio State Pure Food and Drug Commission. New York. **$4.50 net**

The Encyclopedia of Food. The Stories of the Foods by Which We Live—How and Where They Grow and Are Marketed—Their Comparative Values and How Best to Use and Enjoy Them. **$10.00**

Food Products—H. C. Sherman. The first and second chapters deal with the principal constituents and functions of foods and with food legislation; then follow chapters on milk, cheese, and other milk products; eggs, meats and meat products; vegetables, fruits and nuts; edible fats and oils; sugars, molasses, syrups and confectionery; and food adjuncts. **$2.75**

Chemistry of Food and Nutrition—H. C. Sherman, Professor of Food Chemistry of Columbia University. Presents the principles of the chemistry of food and nutrition with special reference to the food requirements of man, and the considerations which should underlie our judgment of the nutritive values of food. **$2.40**

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The Place of The Trade Paper in Modern Business

BRIEFLY our objectives are these:

First: To assume leadership in gathering and spreading information within our special field.

Second: To promote the interests and aid the development of the food industry.

Third: To provide a clearing house for trade ideas and business possibilities in this field.

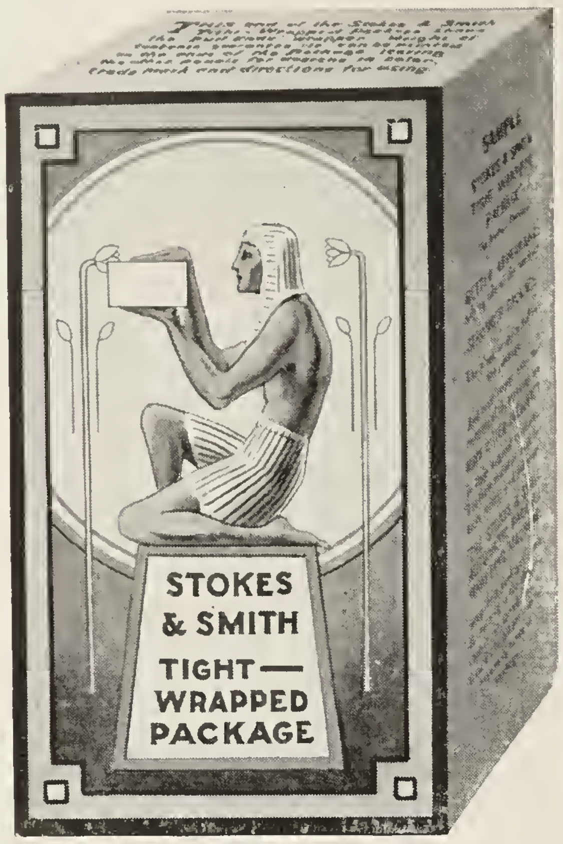
The foundation stone upon which we are building is SERVICE. The service idea in business was new fifteen or twenty years ago, but today we find manufacturers, banks, insurance companies and many other commercial organizations doing many things for their customers and for the public in general for which they are not paid —in dollars. They recognize more and more that the strength of a business enterprise is largely measured by the degree of good will it enjoys, and good will is confidence born of service rendered.

In no enterprise does the element of good will play so large a part as in the publication of a trade paper. This is particularly true of the food trades. The whole business of industrial publishing is distinctively a service-rendering business, and from this service good will is born.

The editor's job is to translate his every activity into good will for his publication. Before circulation can be built and advertising patronage obtained, there must be a bedrock of editorial service. Our service, then, must consist first of a pledge to consider solely the interest of our subscribers; to work for truth and honesty in all departments, and to eliminate, so far as possible, our personal opinions from our news columns, and at the same time to be a leader of thought in the editorial columns and to make our criticisms constructive. Moreover, our paper must not be the organ or mouthpiece of any house or combination of houses to further such special interests as against the joint interest of the groups we serve. Obviously to perform an independent service we may not be owned directly or indirectly by any trade, class or professional association.

The editor of the AMERICAN FOOD JOURNAL must determine what is the highest and largest function of the food field and then strive in every legitimate way to promote that function. With a desire to promote honestly and courageously the best interests of our clientele, success must be our ultimate reward. Though recognition of our work may come slowly it will come surely, and we shall make a definite place for ourselves and our paper in the food industry.

C. E. Wright



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ADVERTISING INDEX

NOVEMBER, 1923

Page
American Can Company ....Back Cover
Beech-Nut Packing Company 506
Bonstedt & Co., W. G. 552
Borden Company 531
Calkins & Company 552
Callahan & Co., A. P. 545
Capital City Products Co. 547
Chicago Dietetic Supply House 552
Economic Machinery Co...Inside Front Cover
Farwell & Rhines Co. 547
Fleischmann Co. 536
Fleischmann Co., Chicago Vinegar Sales Department 551
Genesee Pure Food Co. 529
Griffith-Durney Company 552
Heinz Co., H. J. 506
Helvetia Company 506
Janson, Nicholas J. 552
Journal of Home Economics 547

Page
Kalamazoo Vegetable Parchment Co... .. 547
Keithly, Bert C., Co. 552
Kingnut 506
Kohnstamm and Co., H. 547
Knox Gelatine Co., C. B. 533
Lee, John C. 552
Los Angeles Times 545
Merrell-Soule Co. 535
Milwaukee Vinegar Co. 549
Muller Brokerage Co. 552
Palmer, McElwain & Cole 552
Pritchard, E. 551
Royal Baking Powder Co. 530
Rumford Company 549
Russell Brokerage Co. 552
Skinners' Macaroni Products 547
Staub-Richardson Co. 552
Stokes & Smith 510
Ward Baking Co. 508

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